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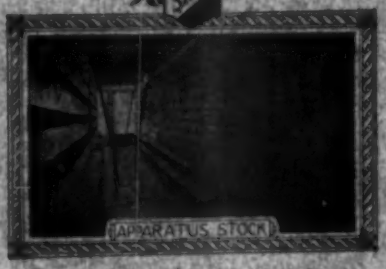

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PRELIMINARY RESULTS OF NUTRITIONAL SURVEYS IN UNITED STATES ARMY CAMPS.

JOHN R. MURLIN, *Lieut.-Colonel, Sanitary Corps,*
and
CASPAR W. MILLER, *Major, Medical Corps,*
Office of Surgeon-General, Washington, D. C.

Abstract of paper read before Food and Drugs Section, American Public Health Association, at Chicago, Ill., December 9, 1918.

Before the war there had never been presented to food experts in this country an opportunity for the extended study of nutrition comparable to that afforded these investigators. Their report sets forth details of observations which support the "training ration," which is appetizing and secures a proper distribution of the nutrients.

THE Food Division of the Surgeon-General's Office,* organized early in September, 1917, for the purpose of "safeguarding the nutritional interests of the Army," was confronted at the outset with various questions relating to the amount of food required by soldiers in training. According to the best American authorities on nutrition the garrison ration of the U. S. Army provided much more than would seem to be required except for very heavy muscular work under rather severe conditions of weather and climate. These opinions were freely voiced in a conference† called by Dr. Alonzo E. Taylor on behalf of Mr. Herbert Hoover, food administrator, at the Food Administration Headquarters in Washington on September 20, 1917 "for the purpose of considering questions relating to the subsistence of the Army."

Contrary opinions were expressed by officers of the Army who had had much experience in small organizations with the army ration. Furthermore, it was explained by General Henry Sharpe, that the garrison ration as laid down in the

* Later established by effect of War Department, General Orders No. 67, 1918, as the Division of Food and Nutrition of the Medical Department, U. S. Army.

† There were present at this conference representatives of the Medical Department of the National Defense Council, of the U. S. Food Administration, of the Surgeon-General's Office, of the Quartermaster-General's Office, of the Bureau of Chemistry, Department of Agriculture, and of the U. S. Navy. The following named were in attendance: Surgeon-General W. C. Gorgas, Quartermaster-General Henry C. Sharpe, Colonel Puckle of the British Army, Col. E. L. Munson and Col. F. F. Russell, Medical Corps, Rear-Admiral Cary Grayson, Dr. Carl L. Alsberg, Dr. F. G. Benedict, Dr. Herman Biggs, Prof. R. H. Chittenden, Prof. D. L. Edsall, Mr. Herbert Hoover, Major T. C. Janeway, Dr. Vernon Kellogg, Dr. C. L. Langworthy, Prof. Graham Lusk, Prof. Lafayette B. Mendel, Prof. E. V. McCollum, Prof. R. M. Pearce, Prof. Raymond Pearl, Dr. Alonzo E. Taylor, Dr. R. L. Wilbur, Prof. W. H. Welch and Major John R. Murlin.

army regulations is not of necessity the amount of food issued: that the ration as defined by regulations is "the allowance for subsistence of one man for one day," the money allowance being calculated upon certain fixed amounts of the ration components* by the local quartermaster each month, so that it varies constantly with market prices. The system of savings in vogue was also explained, according to which the unexpended balance of the ration allowance accrues to the credit of the organization conducting the mess and according to which also, varying somewhat with local conditions but likely to obtain in all training camps in this country, a certain percentage of the ration allowance can be drawn in money and be spent in the local market for fresh vegetables or such other articles not carried by the camp quartermaster, as may please the fancy of the mess sergeant.

Mr. Hoover and Dr. R. L. Wilbur both alluded to the numerous complaints, which had come to the office of the U. S. Food Administration from civilians visiting army camps thus far established, of the enormous wastage of food to be seen in those camps.

There was evident at this conference a deep reluctance on the part of the civilian authorities in nutrition, as well as on the part of army officers to make any arbitrary reduction in the ration allowance, even though it might be conceded that the soldiers could live on less. To meet this situation in the face of a threatened world shortage of food it was proposed by the director of the Food Division of the Surgeon-General's Office, that nutritional surveys be conducted by experienced observers in the several army camps with a view to determine quantitatively the actual consumption and the actual wastage of food. The plan proposed apparently met with the approval of all present although no vote to this effect was taken. It was unanimously approved by a group of experts* in nutrition who had agreed to act as an Advisory Council to the Division of Food and Nutrition, and was formally approved by the surgeon-general and informally by the quartermaster-general at that time.

While the immediate motive which prompted the nutritional surveys was the determination of the actual food requirements of the Army in the interest both of satisfactory nutrition and of food conservation, other objects were kept steadily in view, as may be inferred from the following excerpt from a memorandum submitted to the surgeon-general, and by him embodied in a letter requesting authority for the surveys from the chief-of-staff:

September 17, 1917.

1. Purpose. The object of this Division is primarily to safeguard the nutritional interests of the Army; (1) by means of competent inspection of the food supplied to the camps with reference especially to its nutritional value; (2) by seeking to improve the mess conditions (cooking and serving of the food) with special attention to the matter of food economy, bearing in mind that palatability and proper cooking are great factors in determining the economical utilization of food in the physiological, no less than in the financial sense; (3) by studying constantly the suitability of the ration as a working man's diet. Does it afford the proper amount and distribution of nutrients? What amount of variability is there, as between different mess houses of the same regiment and between different camps? Any intelligent alteration of the ration from time to time must be based on facts, and it is the purpose of this Division to get facts.

Method.

The method of conducting a nutritional survey was in brief as follows: A survey party, reporting to the command-

*See paragraph 1221, U. S. Army Regulations, 1913, corrected to 1918.

*Members of this Advisory Council were Dr. C. L. Alsberg, Dr. F. G. Benedict, Prof. Graham Lusk, Prof. L. B. Mendel, Prof. E. V. McCollum and Prof. A. E. Taylor.

ing officer, usually spent the first few days in becoming acquainted with the camp and in learning where typical messes could be found. The advice of the sanitary inspector and of the officer in charge of the School for Bakers and Cooks where such schools existed, was sought in determining which messes were fairly representative of the entire camp. The most highly efficient, as well as the poorest messes, were purposely avoided.

The first few days were spent also in a preliminary inspection of the subsistence stores and of the food on hand at the mess houses.

The number of messes selected for quantitative study varied all the way from a single mess at Camp Crane, Allentown, Pa., where all of the Ambulance Service students were fed at one large mess in the same hall, to 40 messes at Camp Lewis, studied by Capt. P. E. Howe's party in April, 1918. The average number of messes studied was in the neighborhood of half a dozen.

The quantitative survey was made according to the method which had been followed by the U. S. Department of Agriculture in making studies of the food consumption of people in small and large groups and which had been found satisfactory by Major Frank C. Gephart* in a study of food consumption and food waste at St. Paul's School, Concord, N. H.

This method had been employed also by the director of the Division of Food and Nutrition in a survey made by him at the first R. O. T. C., 1917, Plattsburg Barracks, New York. It consists essentially in making careful inventories by weight of all foods in the store room at the beginning and at the end of a definite period and of all accessions to stock during the period. Concurrently, the garbage is carefully separated into edible and inedible portions; the former is weighed, ground through a meat grinder, or chopped with spades according to the amount, and a sample taken for analysis. Any foods whose composition is in question are likewise analyzed. Deducting the second inventory from the first plus accessions to stock, and reducing to protein, fat, carbohydrate and energy content, and finally subtracting protein, fat, carbohydrate and energy found in the edible waste, the net consumption of food per man per day may be calculated.

Table I shows the average amount of food supplied, wasted and consumed per man per day; the distribution of fuel value in the food consumed; the percentage of each class of food wasted, as well as the percentage of the total fuel value wasted; the cost of the food consumed per man per day; the value of the food wasted; and the average amounts of total waste and edible waste. It will be seen that the average amount of food consumed has not changed materially with the increased number of messes. This is significant as showing that the number of messes surveyed is actually representative of the whole army in training.

Table II, comprising 385 messes, gives the consumption in the various kinds of messes. Differences are here brought out which are not apparent in Table I. A few messes of officers, cadets and prisoners were considered so atypical that they are not included in any of these groups.

The average total consumption of food at the mess amounts to a little over 3,600 calories. Since it was found by weighing 1,000 men (Camps Grant, Dodge, Funston and Devens) that the average soldier after five months training weighs 146.5 pounds net, this 3,600 calories amounts to about 24.6 calories per pound of body weight.

* Frank C. Gephart: Report on a Dietary Study of St. Paul's School, Concord, N. H. *Boston Medical and Surgical Journal*, Vol. CLXXVI, No. 1, pages 17–22, January 4, 1917.

TABLE I.

NUTRIENTS AND ENERGY CONSUMED IN TRAINING CAMPS.

	Food per Man per Day						
	Nutrients	Supplied	Wasted	Consumed	Consumed Distr. of FV	Wasted	Per Man per Day
Averages 49 messes	Protein gm	139	12	127	14 %	9 %	Consumed cost 41.39 ¢
	Fat gm	129	14	115	30 %	11 %	Waste cost 3.57 ¢
	Carbohydrate gm	539	40	499	56 %	7 %	Total waste ---- -- lb.
	Fuel Value Cal	3980	343	3637	100 %	9 %	Edible waste ------ lb.
Averages 68 messes	Protein gm	139	11	128	14 %	8 %	Consumed cost 40.82 ¢
	Fat gm	127	13	114	29 %	10 %	Waste cost 3.51 ¢
	Carbohydrate gm	537	37	500	57 %	7 %	Total waste .82 lb.
	Fuel Value Cal	3853	318	3635	100 %	8 %	Edible waste .45 lb.
Averages 85 messes	Protein gm	139	10	129	14 %	7 %	Consumed cost 41.58 ¢
	Fat gm	130	12	118	30 %	9 %	Waste cost 3.41 ¢
	Carbohydrate gm	536	35	501	56 %	7 %	Total waste .82 lb.
	Fuel Value Cal	3977	297	3680	100 %	7 %	Edible waste .43 lb.
Averages 143 messes	Protein gm	139	10	129	14 %	7 %	Consumed cost 42.55 ¢
	Fat gm	132	12	120	30 %	9 %	Waste cost 3.10 ¢
	Carbohydrate gm	534	33	501	56 %	6 %	Total waste .85 lb.
	Fuel Value Cal	3987	288	3699	100 %	7 %	Edible waste .44 lb.
Averages 185 messes	Protein gm	138	9	129	14 %	7 %	Consumed cost 42.17 ¢
	Fat gm	130	12	118	30 %	9 %	Waste cost 2.99 ¢
	Carbohydrate gm	529	32	497	56 %	6 %	Total waste .82 lb.
	Fuel Value Cal	3944	280	3684	100 %	7 %	Edible waste .43 lb.
Averages 213 messes	Protein gm	138	9	129	14 %	7 %	Consumed cost 42.75 ¢
	Fat gm	133	12	121	31 %	9 %	Waste cost 3.00 ¢
	Carbohydrate gm	527	31	496	55 %	6 %	Total waste .83 lb.
	Fuel Value Cal	3963	276	3687	100 %	7 %	Edible waste .42 lb.
Averages 361 messes	Protein gm	133	9	124	14 %	7 %	Consumed cost 43.35 ¢
	Fat gm	130	15	115	30 %	12 %	Waste cost 3.46 ¢
	Carbohydrate gm	513	32	481	56 %	6 %	Total waste .86 lb.
	Fuel Value Cal	3858	308	3550	100 %	8 %	Edible waste .40 lb.
Averages 427 messes	Protein gm	131	9	122	14 %	7 %	Consumed cost 44.06 ¢
	Fat gm	134	11	123	31 %	8 %	Waste cost 3.20 ¢
	Carbohydrate gm	516	31	485	55 %	6 %	Total waste 0.80 lb.
	Fuel Value Cal	3899	266	3633	100 %	7 %	Edible waste 0.38 lb.

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TABLE II.

NUTRIENTS AND ENERGY CONSUMED PER MAN PER DAY BY TROOPS UNDER DIFFERENT CONDITIONS.

	No. of Messes	Protein	Fat	Carbohydrates	Fuel Value
		Gms.	Gms.	Gms.	Cals.
Line troops in active training and in Spruce Production Camps	263	127	120	483	3,615
Aviation Camps, mechanics only	38	118	119	469	3,510
Troops preparing for immediate overseas service	11	128	126	496	3,730
Medical troops, excluding patient messes	20	113	124	436	3,405
Messes under quarantine, activity of men not restricted	17	125	124	496	3,700
Recruits, usually just inoculated	36	117	109	435	3,275
Average of above *385 messes*		124	119	475	3,560

To this must be added the amount of nutrients consumed from the post exchange or canteen. Survey parties have made estimates of the man per day consumption from the canteens in a large majority of the surveys; some of individual companies, some of entire regiments, and a few like Camp Crane and Chanute Field, of entire camps. The average daily consumption from the canteen is 365 calories; the average total consumption of nutrients, therefore, is 3,998 (3,633 plus 365) calories or 27 calories per pound. According to Lusk, 3,898 calories is the amount required by a mature soldier of this weight in order to maintain his body and to do a forced march on a level road of thirty miles in ten hours, carrying a pack and other equipment weighing 44 pounds. This coincidence is striking. It is evident, therefore, that the soldier in training eats enough every day to do this large amount or work, or provide for the exigencies of unfavorable weather conditions. If the work is not done, he accumulates fat; and as a matter of fact the observation of this Division (Camps Devens, Grant, Dodge, Funston) indicate an average gain of 7½ pounds in three months. It would not be proper to regard this gain as entirely consisting of fat, however, since there is undoubtedly, at least in the case of men from sedentary occupations, considerable "muscling up." There is also increase in stature, or "straightening up," of the younger men.

It is particularly interesting to note in Table I the constancy of distribution of the fuel value as to the three sources of energy,—protein, fat and carbohydrate. With the addition of the canteen purchases the final distribution, however, is somewhat different (see note at end of Table IV).

Most of the foods purchased at the post exchange are chocolates, soft drinks, cakes and pies. The fact that soldiers insist upon consuming such quantities of these articles (representing about 10 per cent of their total energy) constitutes a direct criticism of the mess. It is better to supply at least a part of the craved sweets in the ration. It will then be possible to discourage such sales and to safeguard the soldier against the sometimes injurious products manufactured by ignorant and unscrupulous firms. Moreover, it is interesting to note that although these post exchange goods consist chiefly of carbohydrates, the cheapest of the three classes of foods, the average cost of 1,000 calories is 28.2 cents; while the average cost of the same energy in the mess, where nearly one-half is supplied by the more expensive protein and fat, is only 12 cents.

The average energy value of the food supplied in 427 messes is 3,891 calories per man per day. The average edible

TABLE III

MONTHLY AVERAGES

Line Organizations, only

	Food per Man per Day				Consumed Distr of FV	Wasted	Per Man per Day	
	Nutrients	Supplied	Wasted	Consumed				
November 1917	Protein gm	139	13	126	14 %	9 %	Consumed cost	42.04 ¢
	Fat gm	133	15	118	30 %	11 %	Waste cost	3.98 ¢
32 messes	Carbohydrate gm	546	45	501	56 %	8 %	Total waste	.85 lb.
	Fuel Value Cal	4045	377	3668	100 %	9 %	Edible waste	.52 lb.
December 1917	Protein gm	144	8	136	15 %	6 %	Consumed cost	40.21 ¢
	Fat gm	127	10	117	29 %	8 %	Waste cost	2.46 ¢
37 messes	Carbohydrate gm	545	29	616	56 %	5 %	Total waste	.87 lb.
	Fuel Value Cal	4006	245	3761	100 %	6 %	Edible waste	.45 lb.
January 1918	Protein gm	137	8	129	14 %	6 %	Consumed cost	42.31 ¢
	Fat gm	134	11	123	31 %	8 %	Waste cost	2.66 ¢
45 messes	Carbohydrate gm	528	28	500	55 %	5 %	Total waste	.71 lb.
	Fuel Value Cal	3973	250	3723	100 %	6 %	Edible waste	.33 lb.
February 1918	Protein gm	137	10	127	14 %	7 %	Consumed cost	41.74 ¢
	Fat gm	131	12	119	31 %	9 %	Waste cost	2.96 ¢
30 messes	Carbohydrate gm	514	30	484	55 %	6 %	Total waste	.78 lb.
	Fuel Value Cal	3887	276	3611	100 %	7 %	Edible waste	.35 lb.
March, 1918	Protein gm	133	9	124	14 %	7 %	Consumed cost	42.67 ¢
	Fat gm	136	11	125	31 %	8 %	Waste cost	2.73 ¢
53 messes	Carbohydrate gm	525	28	497	55 %	5 %	Total waste	.87 lb.
	Fuel Value Cal	3963	254	3709	100 %	6 %	Edible waste	.37 lb.
April, 1918	Protein gm	133	8	125	14 %	6 %	Consumed cost	44.12 ¢
	Fat gm	134	10	124	33 %	7 %	Waste cost	2.85 ¢
60 messes	Carbohydrate gm	488	29	459	53 %	5 %	Total waste	.95 lb.
	Fuel Value Cal	3792	245	3547	100 %	6 %	Edible waste	.33 lb.
May, 1918	Protein gm	126	7	119	14 %	6 %	Consumed cost	41.98 ¢
	Fat gm	122	7	115	31 %	6 %	Waste cost	2.18 ¢
43 messes	Carbohydrate gm	497	24	473	55 %	5 %	Total waste	.70 lb.
	Fuel Value Cal	3689	192	3497	100 %	5 %	Edible waste	.29 lb.
June, 1918	Protein gm	129	8	121	14 %	6 %	Consumed cost	45.59 ¢
	Fat gm	129	12	117	31 %	9 %	Waste cost	3.29 ¢
16 messes	Carbohydrate gm	495	31	464	55 %	6 %	Total waste	.90 lb.
	Fuel Value Cal	3758	271	3487	100 %	7 %	Edible waste	.37 lb.

waste is 266 calories per man per day, which is 7.0 of the energy supplied. The weight of the edible waste was 0.38 pounds; and since it has been found that the average cost of edible waste is 7.9 cents per pound, this 0.38 pound represents a loss of about 3.0 cents. The principal items of waste are meat, bread and potatoes, these being the articles drawn in largest amounts.

Seasonal Variation.

The nutritional surveys have demonstrated for the first time on a satisfactory basis the larger consumption by men doing equally hard muscular work in cold weather. This fact was already well-known empirically, but, so far as known to the writers, had failed of demonstration scientifically. This seasonal variation is shown in the accompanying table which exhibits the actual average consumption of food per man per day in the different months beginning October, 1917, and ending December, 1918. The ratio of the different classes of foodstuffs consumed, however, remains nearly constant throughout the entire period of the survey.

Another factor affecting the consumption of food is the length of time in service. When the raw recruit begins training he is under various abnormal conditions all tending to reduce food consumption. It is the period of typhoid inoculation; the recruit is frequently homesick; unfamiliarity with his surroundings to a considerable extent prevents him from making himself as comfortable as he will later become; he frequently experiences dislike for the cooking and menu, which is later overcome in part because the cooks themselves improve, and in part by habituation. Studies of the body weights of recruits exhibit in this period a loss of several pounds which, however, is recovered by the end of the third or fourth week. The difference in food consumption is shown in the following comparison:

Mess consumption of recruits, average of 36 messes	3,275 calories
Mess consumption after men have been in camp three or more weeks, average of 251 messes	3,750 calories

In both cases the men were in line training and doing fairly heavy work.

While much work of inspection was done by the survey parties the chief object of their visits was to assist in the adoption of such measures as would result in proper nutrition of the soldier. Granting proper stimulus to the digestive organs resulting from hunger, proper nutrition is accomplished when food is selected with reference to the proper distribution of nutrients and is properly cooked and served. The garrison ration as issued (A. R. 1221) which is the *basis of feeding* for all training camps is a fairly well-balanced ration as regards protein, fat and carbohydrate, but not so as regards the mineral salts. The exact dietary selected by the average mess sergeant from the foods available at subsistence stores and from local sources has proved to be not so well-balanced. There is an excessive proportion of protein and, from the economical point of view, an unnecessarily large proportion of fat. Reference will be made later to this average dietary which has been selected in the training camps.

Instruction in the nutritional value of protein, fat, carbohydrate, mineral salts and vitamines has been given by individual interview and by conference with mess sergeants and mess officers of regiments in practically all the camps visited. This has resulted in a better understanding of their responsibilities on the part of mess officer and mess sergeant. Instruction has been given also in the construction of menus so as to insure a sufficient supply, without excess, of each of

the important foodstuffs. It is the general concensus of opinion amongst experts in nutrition that an excess of protein is undesirable in the dietary of a hard-working man, since muscular work does not involve destruction of muscular tissue beyond the amount sustained by that tissue in muscular rest. The amount of protein, which in general is held to be sufficient to repair all the wastes of the body and to supply an adequate reserve, is 13 per cent of the total energy intake. It seems to be a matter of indifference to the muscles whether they receive their energy from carbohydrate or from fat, except that carbohydrate yields its energy more rapidly than does fat. Hard muscular work, therefore, can be done on a high carbohydrate diet or upon a high fat diet. It is of general experience, however, that *muscular work is done with less effort* if there is a plentiful supply of carbohydrate. Moreover, it is well known that carbohydrate is a cheaper source of muscular energy than is fat. All the requirements for training of soldiers, therefore, would be met by a dietary supplying 13% per cent of the total energy in the form of protein, 25 per cent in the form of fat and 62½ per cent in the form of carbohydrate. This distribution has been fixed upon as approximating the ideal for the training camps, the exact proportion of 1:2:5 having been chosen as a matter of convenience in devising a mechanical means of balancing the dietary.*

The Sufficiency of the Garrison Ration.

It has already been mentioned on page 401 that the garrison ration would seem to provide much more than the necessary amount of energy for the training period. The nutritional surveys have confirmed this view *beyond peradventure*. Even with *moderate efficiency* an organization can, under the existing system, effect very large savings. This *obviously* leads to wastefulness in the *purchase of foods not needed*, and *numerous instances could be cited of almost profligate use of mess funds accumulated in only a few months of training*.

In summary the garrison ration exhibits the following defects: (1) it provides more food than necessary; (2) it is not well balanced as regards the mineral salts; (3) there is an excess of fat. The first of these defects leads to wastefulness; the third makes it impossible to issue the ration in kind.†

A study of the actual average amounts of different articles of food selected on free choice by the mess sergeants, following, it is presumed, the express wishes of the men in their organizations, furnishes a safe basis for readjustment of the ration. Table V exhibits a comparison of the garrison ration with the average amounts of the various articles of food supplied in 400 messes scattered all over the United States and distributed fairly evenly throughout the year. In parallel columns also are shown the amounts of the various component articles recommended by the Division of Food and Nutrition as furnishing a better distribution of nutrients and yielding an adequate amount of energy even for the extreme needs of the soldiers in training. The amounts proposed in most instances follow closely the actual average consumption of food supplied throughout the period of heaviest training. It will be noted that the garrison ration provides an excess of meats of all classes and an enormous excess of flour or bread, slightly more than the amount needed of vegetables, scarcely enough of fruits and quite amply wholly

* The mechanical "ration balance" will be described in a separate communication.

† Experience in the American Expeditionary Force has confirmed this opinion.

TABLE IV.

COMPARISON OF INDIVIDUAL RATIONS WITH AVERAGE AMOUNTS SUPPLIED IN 40 MESSES.

Item.	Garrison Ration (A. R. 123).		Supplied in 40 Messes.		Prisoners' Training Ration.		
	Component.	Substitute.	Component.	Substitute.	Component.	Substitutes (Issue).	
						Energy.	Protein.
Meat (fresh)	1½		1·8		1		
Bacon						0·2	0·2
Cheese, hard (ration)						1·—	·—
Oil						1·7	1·6
Fish (fresh, tinned)				0·6		5·—	2·—
Fish (fresh, dried)						7·—	2·—
Fish (preserved)				0·2		3·—	·—
Meat, salted, hot				0·3		2·—	1·—
Lard				0·2		2·—	·—
Sausage						0·07	1·—
Pork				0·2		·—	1·—
Poultry				0·2		1·—	1·—
Game				0·2		2·—	2·—
Total meat, etc.	1½		1·8	1·2	1		
Total meat, etc.	1½		1·8		1		
Beans		0·3	0·6		0·3		
Flour				0·4		0·27	0·03
Sausage, suet				0·6		0·73	0·03
Total beans, etc.		0·3	0·6	1·07	0·3		
Total beans, etc.		0·3		1·6	0·3		
Meat	1½		1·8		1		
Bread, soft		1½		0·8		0·27	0·03
Bread, hard		1½		0·6		0·2	0·03
Total bread, etc.	1½		1·8	0·27	1		
Total bread, etc.	1½		1·8	1·6	1		
Other cereal (ration)			0·3		0·33		
Corn meal				0·03		0·8	0·07
Barley				0·04		0·6	0·03
Total other cereal			0·3	0·6	0·33		
Total other cereal				0·3	0·33		
Baking Powder	0·6				0·6		
Beans, dried	0·2		0·9		0·2		
Beans, haricot, canned						0·03	0·9
Peas, canned				0·02	0·03		
Peas, dried						0·1	0·1
Corn, canned				0·09	0·3		
Total beans, etc.	0·2		0·9	1·0	0·33		
Total beans, etc.	0·2			0·7	0·33		

the important foodstuffs. It is the general concensus of opinion amongst experts in nutrition that an excess of protein is undesirable in the dietary of a hard-working man, since muscular work does not involve destruction of muscular tissue beyond the amount sustained by that tissue in muscular rest. The amount of protein, which in general is held to be sufficient to repair all the wastes of the body and to supply an adequate reserve, is 13 per cent of the total energy intake. It seems to be a matter of indifference to the muscles whether they receive their energy from carbohydrate or from fat, except that carbohydrate yields its energy more rapidly than does fat. Hard muscular work, therefore, can be done on a high carbohydrate diet or upon a high fat diet. It is of general experience, however, that muscular work is done *with less effort* if there is a plentiful supply of carbohydrate. Moerover, it is well known that carbohydrate is a cheaper source of muscular energy than is fat. All the requirements for training of soldiers, therefore, would be met by a dietary supplying 12½ per cent of the total energy in the form of protein, 25 per cent in the form of fat and 62½ per cent in the form of carbohydrate. This distribution has been fixed upon as approximating the ideal for the training camps, the exact proportion of 1:2:5 having been chosen as a matter of convenience in devising a mechanical means of balancing the dietary.*

The Suitability of the Garrison Ration.

It has already been mentioned on page 401 that the garrison ration would seem to provide much more than the necessary amount of energy for the training period. The nutritional surveys have confirmed this view beyond peradventure. Even with moderate efficiency an organization can, under the existing system, effect very large savings. This obviously leads to wastefulness in the purchase of foods not needed, and numerous instances could be cited of almost profligate use of mess funds accumulated in only a few months of training.

In summary the garrison ration exhibits the following defects: (1) it provides more food than necessary; (2) it is not well balanced as regards the mineral salts; (3) there is an excess of fat. The first of these defects leads to wastefulness; the third makes it impossible to issue this ration in kind.*

A study of the actual average amounts of different articles of food selected on free choice by the mess sergeants, following, it is presumed, the express wishes of the men in their organizations, furnishes a safe basis for readjustment of the ration. Table V exhibits a comparison of the garrison ration with the average amounts of the various articles of food supplied in 400 messes scattered all over the United States and distributed fairly evenly throughout the year. In parallel columns also are shown the amounts of the various component articles recommended by the Division of Food and Nutrition as furnishing a better distribution of nutrients and yielding an adequate amount of energy even for the extreme needs of the soldiers in training. The amounts proposed in most instances follow closely the actual average consumption of food supplied throughout the period of heaviest training. It will be noted that the garrison ration provides an excess of meats of all classes and an enormous excess of flour or bread, slightly more than the amount needed of vegetables, scarcely enough of fruits and coffee and a wholly

* This mechanical "ration balance" will be described in a separate communication.

* Experience in the American Expeditionary Force has confirmed this opinion.

TABLE IV.

COMPARISON OF GARRISON RATION WITH AVERAGE AMOUNTS SUPPLIED IN 400 MESSES.

Food	Garrison Ration A. R. 1221		Supplied in 400 Messes		Proposed Training Ration		
	Components	Substitutes	Components	Substitutes	Components	Substitutes on Basis of	
						Energy	Protein
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
Beef, fresh	14		8.85		12		
Cheese						6.22	7.22
Corned beef (canned)						14.7	7.2
Eggs						19.72	15.68
Fish, fresh (salmon)				0.40		18.1	10.8
Fish, fresh (cod)						73.4	22.4
Fish, preserved				0.27		23.2	8.3
Hash, corned beef				0.19		22.7	13.2
Liver				0.22		21.9	9.3
Mutton						9.07	14.5
Pork				0.75		9.8	12.9
Poultry				0.19		13.1	12.6
Veal				0.26		20.7	10.3
Total beef, etc.	14		8.85	2.28	12		
Total beef, etc.	14		11.13		12		
Bacon		3.6	0.56		2	3.7	1.3
Ham				0.61		4.7	0.9
Sausage, pork				0.86			
Total bacon, etc.		3.6	0.56	1.47	2		
Total bacon, etc.	3.6		2.03		2		
Flour	18		2.38		10		
Bread, soft		18		6.59		10.67[1]	10.96
Bread, hard		16		0.08		9.22	10.00
Total flour, etc.	18		2.38	6.67	10		
Total flour, etc.	18		9.05		10		
Other cereals (oatmeal)			0.38		1.5		
Corn meal				0.51		1.68	2.70
Farina				0.45		1.65	2.50
Total other cereals			0.38	0.96	1.5		
Total other cereals			1.34		1.5		
Baking Powder	0.08				0.08		
Beans, dried	1.2		1.09		1.5		
Beans, baked, canned						4.01	4.90
Peas, canned				0.82	1.0		
Peas, dried						0.16	0.14
Corn, canned				0.80	1.0		
Total beans, etc.	1.2		1.09	1.62	3.5		
Total beans, etc.	1.2		2.71		3.5		

TABLE IV.—*Continued.*

Food	Garrison Ration A. R. 1221		Supplied in 400 Messes		Proposed Training Ration		
	Components	Substitutes	Components	Substitutes	Components	Substitutes on Basis of	
						Energy	Protein
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
Rice		0.8	0.43	0.30	1.0	1.00	1.04
Hominy				0.27		0.98	1.61
Macaroni and Spaghetti						0.97	
Corn Starch							
Total rice, etc.		0.8	0.43	0.57	1.0		
Total rice, etc.	0.8		1.00		1.0		
Potatoes, white	14		12.22		14	2.72	2.77
Potatoes, white, dehy.				0.48	2.5		
Potatoes, sweet						0.70	0.68
Potatoes, sweet, dehy.							
Total Potatoes	14		12.22	0.48	16.5		
Total Potatoes	14		12.70		16.5		
Onions, fresh		4	0.74		4	0.48	
Onions, dehy.				1.11		6.44	
Cabbage, fresh						0.52	
Cabbage, dehy.				0.09		4.63	
Beets, fresh						0.51	
Beets, dehy.				0.14		4.86	
Carrots, fresh						0.49	
Carrots, dehy.				0.21		7.07	
Spinach, fresh						0.61	
Spinach, dehy.				0.35		6.24	
Turnips, fresh						0.50	
Turnips, dehy.							
Total onions, etc.		4	0.74	1.90	4		
Total onions, etc.	4		2.64[2]		4		
Tomatoes, canned		2	1.41		2	0.13	
Tomatoes, dehy.							
Total Tomatoes		4	1.41		2		
Total Tomatoes	2		1.41[2]		2		
Prunes	0.38		0.46		0.5		
Apples, evap.		0.13	0.13[2]		0.25		
Peaches, evap.		0.13	0.32		0.25		
or pears, evap.						0.27	
or apricots				0.13[2]		0.25	
or raisins and currants					1.00	0.22	
Jam or Fruit Butter		0.64	0.59				
Total prunes, etc.	0.38	0.90	1.50	0.13	2.00		
Total prunes, etc.	1.28		1.63		2.00		

TABLE IV—*Continued.*

Food	Garrison Ration A. R. 1221		Supplied in 400 Messes		Proposed Training Ration	
	Components	Substitutes	Components	Substitutes	Components	Substitutes on Basis of Energy
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
Bananas				0.34	1.5	
Apples						2.04
Cranberries						2.08
Lemons						3.1
Oranges				0.94		2.59
Peaches						2.88
Pears						1.72
Pineapple				0.19		0.62
Total fresh fruits				1.47	1.5	
Total fresh fruits			1.47[a]		1.5 (as banana)	
Coffee	1.12		1.08		1.2	
Tea						0.35
Cocoa						0.5
Total coffee, etc.	1.12		1.08		1.2	
Total coffee, etc.	1.12		1.08[a]		1.2	
Sugar	3.2		3.81		5	
Milk, evaporated	0.5		2.34		2.5	
Milk, fresh or reconstituted						5.30
Total milk	0.5		2.34		2.5	
Total milk	0.5		2.34		2.5	
Vinegar	0.64[b]					
or						
Vinegar	0.32				0.12	
Pickles		0.32			0.18	
Total vinegar, etc.	0.32	0.32			0.30	
Total vinegar, etc.	0.64				0.30	
Pepper	0.04				0.02	
Salt	0.64				0.5	
Cinnamon	0.014				0.014	
Cloves		0.014				
Nutmeg		0.014				0.014
Ginger		0.014				0.014
Total spices	0.014		0.003[a]		0.014	
Lard	0.32		0.11			
Lard substitute		0.32	0.66			
Total lard, etc.	0.32	0.32	0.77			
Total lard, etc.	0.64		0.77			

TABLE IV—*Continued.*

Food	Garrison Ration A. R. 1221		Supplied in 400 Messes		Proposed Training Ration	
	Components	Substitutes	Components	Substitutes	Components	Substitutes on Basis of Energy
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
Butter	0.25		0.47		0.5	
Oleomargarine		0.25	0.11		0.5	
Total butter, etc.	0.25	0.25	0.58		1.0	
Total butter, etc.	0.50		0.58		1.0	
Sirup	1.78[3]		0.70		1.00	
Flavoring extract	0.014				0.014	
ENERGY SUPPLIED Calories	4859		3504[8]		4132	
% DISTRIBUTION OF Calories	P. 12.5	F. 33.3 C. 54.2	P. 13.8	F. 31.4 C.[8] 54.8	P. 12.6	F. 30.3 C. 57.1
[7] Canteen Cost based on Q. M. prices March, 1919	51.90¢		13.2	31.2 55.6	48.64¢	

[1] One two-pound loaf for each three men.
[2] These figures are based on 227 messes.
[3] Based on 4% fat.
[4] Equivalent to 0.16 gill.
[5] Equivalent to 0.32 gill.
[6] 3504 calories were supplied by articles enumerated above. In addition small quantities of a large variety of other foods were also used so that the total energy supplied amounted to 3900 calories. The percentage distribution of nutrients given is based on the food actually supplied by the messes.—(Calculations) F. H. S., 3-31-19.
[7] By addition of the average daily purchase from the canteen this distribution becomes: 13.2% P.; 31.2% F.; and 55.6% C. H.

inadequate amount of milk, butter and sugar.

This new ration which it is proposed should be called the "training ration" presents the following advantages: (1) as regards the chief components it is approximately what the soldier has selected during the period of training for overseas service: It is, therefore, a ration *which can be eaten* and which can be issued in kind, and which, if issued in kind, would satisfy the appetite. (2) It would compel organizations to secure their luxuries by exercising more rigid economy. This would result in increased efficiency of the mess and consequently increased conservation of food. (3) A satisfactory distribution of nutrients is guaranteed. There would, therefore, be no need of outside purchases of food. Consequently, (4), all purchases could be centralized in the hands of the quartermaster and this itself would result in greater saving to the government.*

That the United States has been generous, not to say extravagant, in the supply of foods for the soldier in training is clearly shown in the accompanying table comparing the rations of the different Allied armies. It will be seen also that the proposed training ration, while effecting a saving of 10 per cent over the existing garrison ration, still provides 12 per cent more than the ration used by any other army during the period of training. The same can be said also for the field rations. The improved field ration

* This change has recently been authorized by changes in Army Regulations No. 83 effective April 1, 1919. The savings privilege has also been abrogated—all unused credits on account of rations reverting to the government.

TABLE V.

TRAINING RATIONS.

Ration	Protein	Fat	Carbohyd.	Protein	Fat	Carbohyd.	Total	Protein	Fat	Carbohyd.
	Gm.	Gm.	Gm.	Cal.	Cal.	Cal.	Cal.	%	%	%
British Home: May, 1918	124	136	419	507	1268	1708	3483	14.6	36.4	49
Canadian Training: Sheet No. 40, July 23, 1918	107	118	344	439	1097	1410	2946	14.9	37.2	47.9
French Normal: March 29, 1918	138	98	467	566	911	1915*	3604	15.7	25.3	59.0
Italian Territorial: Feb. 1, 1917	127	38	469	521	353	1923	2797	18.6	12.6	68.8
U. S. Garrison: A. R. 1221, July 16, 1918	147	174	643	605	1619	2635	4859	12.5	33.3	54.2
U. S. Training Ration: (proposed)	127	135	575	520	1254	2358	4132	12.6	30.3	57.1

* Includes 250 cc. wine equals 212 calories.

FIELD RATIONS.

Ration	Weight			Fuel Value			Total	Distribution		
	Protein	Fat	Carby.	Protein	Fat	Carby.		Protein	Fat	Carby.
	Gm.	Gm.	Gm.	Cal.	Cal.	Cal.	Cal.	%	%	%
British Field: May, 1918	156	153	441	640	1423	1808	3871	16.5	36.8	46.7
British Field and Trench: May, 1918	157	166	485	644	1544	1989	4177	15.4	37.0	47.6
French Strong: March 29, 1918	150	105	509	615	977	2407*	3999	15.4	24.4	60.2
Italian Combating: Feb. 1, 1917	131	45	535	535	419	2196	3329†	16.9	13.4	69.7
U. S. Trench, adopted Nov. 1, 1918: (Garrison and additions) Nov. 1 to March 31 incl.	162	209	594	664	1943	2435	5042	13.1	38.6	48.3
Apr. 1 to Oct. 31 incl.	145	175	594	594	1627	2435	4656	12.8	34.9	52.3

* Includes 375 cc. wine equals 320 calories.
† Includes wine equivalent to 179 calories.

adopted November 1, 1918 for the American Expeditionary Force is considerably larger than that of any other army of the Allies.

It was in this pleasant James McConnell Memorial Hospital at Farm Life School, Moore Co., N. C., that the afternoon session of the State Health Officers' Association was held on April 14. It is a bright, sunny spot, with inviting outlooks, certainly conducive to speedy convalescence and recovery.

A BRIEF REVIEW OF INDIRECT CONTACT TRANSMISSION AND A PRELIMINARY REPORT OF CORROBORATIVE LABORATORY RESEARCH

LIEUT.-COLONEL JAMES G. CUMMING, *Medical Corps, U. S. A.*
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Risk of infecting the hand through careless dishwashing, mess-kit washing being the method considered, has already been discussed by this author. Here he follows up field observation with laboratory tests. He oxonerates home dishwashing and states that it is not a major route of hand infection. : : : : : : : : :

IN former reports on indirect transmission attention was directed to the difference in influenza rates among troops using tableware and among those using mess-kits. In our first report of 22,084 troops, epidemiological investigation showed that 80 per cent of the cases occurred among troops using mess-kits.* In a subsequent report a study was made of the incidence of the infection among additional troops making a total in the two series of 66,076 men.† In this last series of studies the ratio of cases between troops using tableware and those using mess-kits was approximately 1–5. In both these series of studies 80 per cent of the cases occurred among men using mess-kits.

This increased incidence among those troops using mess-kits was accounted for on the following basis: In a large number of field observations it was determined that the average temperature of the mess-kit wash water was scarcely more than body temperature; this water was inadequate in amount and became grossly contaminated with organisms from mess-gears and hands.

This wash water was the most intimate and common point of contact for all men in an organization. It was the chief focus to which contagion was added and taken away by men composing the organization. This exchange of mouth organisms through the mess-kit wash water occurred three times a day as long as the organization remained intact.

The exact route, or routes, of travel of the infection from the mouth of the infected to the wash water and thence to the mouth of the non-infected was a question difficult of determination, but the following observation led us to the decision that among troops the most likely route of travel from the wash water to the mouth was by the hand—in washing their mess-kits men almost invariably used their hands as mops. This procedure resulted in hand contamination and as the soldier's hands frequently visit his mouth—the soldier and civilian are alike in this respect—infection took place with great facility by the hand route of travel. The distribution of influenza among troops using mess-kits is, then, by *indirect* contact and chiefly by the hand to mouth route of travel. The contaminated hand then, is the major route of travel at the mess, while there is also a minor route of travel from the contaminated wash water to the mouth through the contamination of the mess-gear itself.

* Lynch and Cumming: The Rôle of the Hand in the Distribution of Influenza Virus and the Secondary Invaders. *Military Surgeon*, December, 1918.

† Lynch and Cumming: The Distribution of Influenza by Indirect Contact—Hands and Eating Utensils. AM. JOURN. PUB. HEALTH, January, 1919.

In addition to the two foregoing routes of transmission peculiar to the customary method of washing mess-kits, the soldier is as exposed as is the civilian to distribution of the virus through the handling of sputum contaminated inanimate objects.

The contaminated hand was wholly responsible for infection by the major route, while by the minor routes the hand and the mess-kits were the chief offenders. Distribution by direct contact or droplet infection is subsidiary to the above indirect methods of spread.

Distribution in Civil Communities.

Let us compare briefly the modes of spread of the sputum borne infection in civil life to those in the Army. There is common dishwater in the home but for the most part this is for small groups of individuals. Furthermore, in these groups the hands of only one individual become contaminated with organisms common to dishwater. In civil life then, the hand as a conveyor of organisms arising from contaminated dishwater is eliminated as a major mode of transmission. As a rule dishwater is used at a higher temperature in the home than it was in the Army; it is used more liberally and does not reach the high bacterial count common to mess-kit wash water. It is not believed that the major mode of distribution in civil life is by the hand, except in the case of children's diseases, and among children living in different families, but it is maintained that it is through the promiscuous use of common eating utensils; while the minor route is through hand to mouth by the touch route of sputum smeared inanimate objects.

Food Borne Transmission.

It, is, of course, recognized that certain sputum borne diseases are often food borne. In this connection it may be said that the influenza incidence in certain groups of our studies presented an epidemiologic character which pointed strongly to the food borne hypothesis of transmission. The explosiveness of the epidemic in certain small groups, in which the sanitary conditions were such as to rule out all other explosive sources except food, would indicate that at times the infection may be spread by this route.

Transmission by Eating Utensils.

In an addendum to a former report it was pointed out that the incidence of influenza among those eating from hand washed dishes was six times greater than among those eating from machine washed dishes.*

This investigation, made in Chicago, covered 17,975 employees in department stores, first and second class hotels, and other eating places. Of these 14,850 ate from machine washed dishes, which were presumably disinfected by boiling water. In this group the rate of infection was 13 per 1,000; while in the other group, composed of 3,125 employees who used hand washed dishes—hand washing of dishes implies dishwater of a temperature sufficiently cool to be bearable to the hand—the rate was 85 per 1,000. It will be noted that 84 per cent of the cases in these two groups occurred among those eating from hand washed dishes. Attention is called to the fact that this survey was made December 12, 1918 at a time when the epidemic had not run its full course. Perhaps a later investigation would have shown a different ratio of cases in the two groups. But the fact remains that some striking factor influenced the incidence of the infection in the two groups. It was believed that this was due to the disinfection of dishes by boiling water when machine washed.

It may be added that a report is in preparation relative to 275,000 individuals

*Lynch and Cumming: The Distribution of Influenza by Indirect Contact—Hands and Eating Utensils. Am. Journ. Pub. Health, January, 1919.

resident in state and Federal institutions in every state in the Union. This investigation has confirmed the findings already reported by us relative to the transmission. The groups to be reported are so varying that unusual corroborative evidence in detail has been adduced which it is believed will be suggestive in preventing sputum borne diseases in institutions, private homes, and public eating places.

Laboratory Researches.

Had too much been assumed in the aforementioned theoretical explanation as to the exact modes of transmission, it is to be pointed out the ratio of cases between soldiers using mess-kits and those using tableware, as well as the ratio between groups of individuals using hand washed and those using machine washed dishes, stands out in striking contrast. It now is necessary, however, to prove or disprove by laboratory research the hypotheses relative to indirect contact transmission, which we have maintained.

In the following there is included a research outline, which was designed to cover the points necessary for this investigation. Its object is:

First: To gather experimental facts covering transmission of the sputum borne infections by both direct and indirect contact.

Second: To correlate these results and after considering them from the practical viewpoint, to determine the most common routes of travel in counter distinction to the minor routes, and the means whereby these routes, especially the major ones, may be blocked.

Laboratory Investigations on Direct and Indirect Transmission of the Sputum Borne Diseases.

A. Streptococcus Hemolyticus.

1. Determine presence or absence of streptococcus hemolyticus on: (a) hands, (b) inanimate object conveyors, (c) tableware, and (d) in tableware wash water.

2. Desiccation tests: Use tableware and other inanimate objects.

3. Can hands of streptococcus carrier be freed of this organism by thorough washing in: first, running water; second, a bowl of water?

4. Ascertain if streptococci can be isolated from mess-kit wash water. Determine number per cc.

5. Examine air and floor dust of streptococcus carrier wards.

B. Apply the aforementioned points when possible to pneumococcus, diphtheria, tubercle, meningococcus, streptococcus viridans, typhoid, and dysentery.

C. Fourteen points:

1. Identify specific organisms on hands and in mouth.

2. Estimate total number of organisms on hands by serial washing.

3. Estimate total number of organisms in mouth by serial washing.

4. Estimate total number of organisms expelled by coughing and by sneezing on a sterile glove. Is there a difference between normal individuals and those who have chronic cough?

5. Estimate total organisms deposited on sterile glove when wiped across the lips or the nose.

6. Estimate total organisms on hands of patients with chronic cough and on those of normal individuals.

7. Ascertain if face mask acts as a filter for dry and for moist organisms.

8. Determine by spray and plate method how long organisms remain suspended in the air.

9. Identify pathogenic organisms on inanimate objects in wards,—including dental instruments and air and floor dust.

10. Estimate total organisms in dishwater of family and in that of restaurant.

11. Determine total number and pathogenicity of organisms on eating utensils after they are hand washed, and after they are machine washed.

12. Determine number of organisms on spoons after use, and after they are washed in the ordinary way.

13. Identify varieties of mouth organisms in streptococcus carriers. What percentage of total count in mess-kit wash water are mouth organisms.

14. Determine viability of pathogenic organisms on wood surface when transferred thereto from carriers.

The foregoing investigation was but recently undertaken. It is far from complete, but the results to date are given for the benefit of those who may wish to follow out similar investigations.

Streptococcus Hemolytious.

1. *a.* Of 340 hands of streptococci carriers, 37 per cent were positive for this organism.

b. Of 29 inanimate objects—table-top, bed-post, sheet, etc.—24 per cent were positive.

c. Of 23 sets of tableware 91 per cent were positive.

d. Of 17 specimens of tableware wash water 94 per cent were positive.

2. Exposure to desiccation—washed and unwashed tableware—streptococci still viable after six days.

3. Hands of a carrier were still positive after washing in soap and running water for seven minutes.

4. Of 29 specimens of mess-kit wash water 90 per cent were positive.

5. Of 4 specimens of air dust of 10 liters each from streptococcus wards none were positive.

6. Of 39 specimens of floor dust from streptococcus wards 75 per cent were positive.

Pneumococcus.

1. *a.* Of 40 hands of patients 15 per cent were positive.

b. Of 14 inanimate objects—table-top, door knobs—21 per cent were positive—type 1 and 4.

c. Of 9 sets of tableware 77 per cent were positive.

Diphtheria.

1. *a.* Of 95 hands of patients 6 per cent were positive.

b. Of 52 inanimate objects 2 per cent were positive.

c. Of 26 sets of tableware 2 per cent were positive.

d. Of 26 sets of tableware wash water none were positive.

Streptococcus Viridans.

1. *a.* Of hands of carriers 100 per cent were positive.

b. Of 15 inanimate objects 14 per cent were positive.

c. Of two sets of tableware 100 per cent were positive.

Tubercle Bacillus.

1. *a.* Of 78 hands of open cases 2 per cent were positive microscopically. Five guinea pigs have been inoculated with scrapings from hands, and five with droplets expelled on a sterile glove by coughing.

Fourteen Points.

1. Not done.

2. By serial washing of 23 pairs of hands for periods of 3 minutes in 5 basins of water, it is found during the first 3 minutes of washing each pair of hands yielded 23 million organisms; the second period 13 million; the third period 8 million; the fourth period 7 million; and the fifth period 3 million.

3. Of 27 specimens of mouth washings each yielded an average of 214 millions. After scrubbing for five minutes this number was reduced to 32 millions.

4. Of 74 specimens of washing from a glove, on which droplets had been expelled by coughing, it was found that an average of 1,666 organisms had been expelled with each act.

5. Of 12 trials in which a sterile glove was wiped across the lips, there was found that on each trial an average of 1,684, 546 organisms adhered to the glove.

6. Not done.

7. Not done.

8. By the spray and plate method it is found on three trials that during the first minute 78 per cent of the organisms fall through a distance of two feet, during the first three minutes 84 per cent and in eleven minutes 100 per cent.

9. Prevalence of pathogenic organisms on inanimate objects covered under "*b*," "*c*," and "*d*." On measles and scarlet fever wards floor dust positive for hemolytic streptococci in 50 per cent of the specimens, while 40 liters of air proved negative for this organism.

10. In 54 specimens of restaurant dishwater the counts per cc. average 4,000,000.

11. Of 11 dishes used by pneumonia patients pneumococcus type 4 was recovered from 73 per cent.

12. Of 12 sets of spoons it was found that by ordinary hand washing only 43 per cent of the organisms were removed.

13. Not done.

14. Not done.

No attempt is made at this time to draw conclusions from these results. A perusal of these findings will, however, make plain the facility with which transmission may occur by indirect contact, and indicates the remote possibility of infection by the ærial route.

◆

New Orleans is getting nearer. Remember, October 27–30, 1919.

FOOD INSPECTION AND FOOD IN RELATION TO PUBLIC HEALTH.

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Assistant Commissioner of Health, Chicago, Ill.

Read before Food and Drugs Section, American Public Health Association, at Chicago, Ill., December 11, 1918.

"Why should not cities solve their milk problems as they have those of water supply?" queries Dr. Koehler. From the vital statistics of a metropolis he asserts relations between food inspection and typhoid and between pasteurization and infant mortality. He considers accurate information on dietetics a necessary health measure.

IT is well that health officials should from time to time check up on the relative value of their various activities. This is especially true when a health department, with insufficient appropriations, is confronted with an urgent demand to expand its work along certain lines, the health-saving values of which have been proven and well defined.

The reason for considering the subject of "Food Inspection and Food in relation to Public Health" is not because there is any great difference of opinion among health officials in regard to these matters, but on account of the misapprehensions still existing in the popular mind.

Food Inspection.—The public still has great faith in all kinds of food inspection and is prone to look upon large condemnations of fruits, vegetables and the like as very effective public health work.

This state of public opinion had its origin in the time when the question of enacting a national pure food law was agitated for years prior to its passage by Congress. Then many extravagant statements were made in regard to the danger of impure foods, and much of the correct information promulgated was misinterpreted by the public. This led to the idea that all food adulterations were "dangerous to health." It is, however, gratifying to note that within recent years public opinion has been formulating more accurately on this subject.

In food inspection work a distinction should always be clearly made between food control as a means of insuring fair trade, food standards based on esthetic values and food inspection from a health conservation standpoint. The objects of the last two are often confused, especially by the general public, and as a result, health departments have not yet been able to confine their food inspection activities to purely disease preventive channels. Chapin* has called attention to the proper value of food inspection in the general program of health conservation work. He gives relative values to various phases of food inspection in his scale of 1,000 points, as follows:

Food:	Adulteration	0
	Sanitation	10
Milk:	Adulteration	3
	Sanitation	17

In commenting upon the value of food control from a health standpoint, he says: "The small value here assigned may arouse protest, but who will argue that the laboratory is not five times, or baby nurses eight times, or the direct control of contagious diseases ten times as important as food sanitation."

He questions the efficiency of the popular sanitation of markets and restau-

*Jour. A. M. A., Vol. 69, No. 2, p. 90.

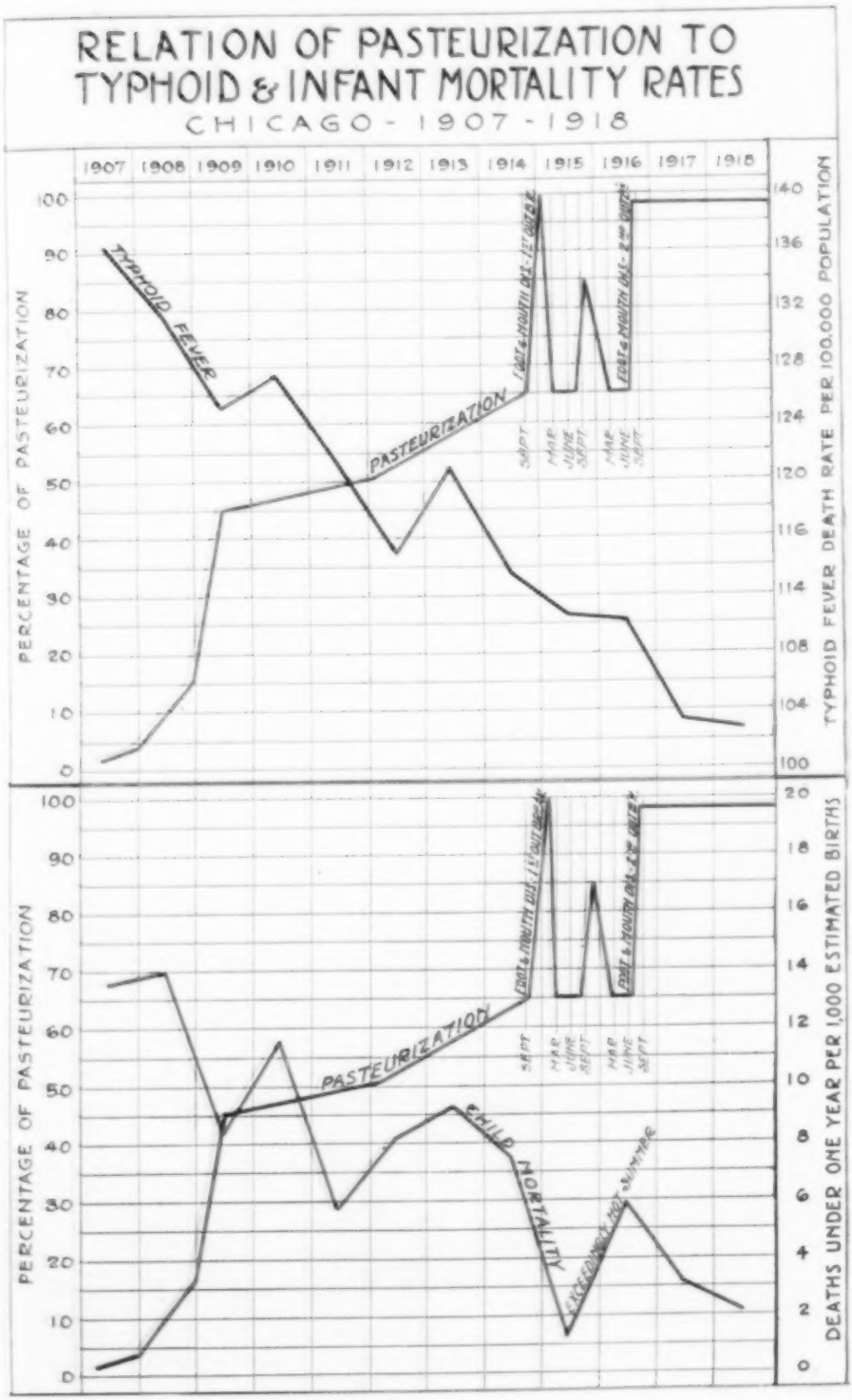
RELATION OF PASTEURIZATION TO TYPHOID & INFANT MORTALITY RATES
CHICAGO - 1907 - 1918
1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918
PERCENTAGE OF PASTEURIZATION
TYPHOID FEVER DEATH RATE PER 100,000 POPULATION
TYPHOID FEVER
PASTEURIZATION
1ST & FOURTH DEC. - 1ST QUARTER
1ST & FOURTH DEC. - 2ND QUARTER
SEPT
MAR JUNE SEPT
MAR JUNE SEPT
PERCENTAGE OF PASTEURIZATION
DEATHS UNDER ONE YEAR PER 1,000 ESTIMATED BIRTHS
PASTEURIZATION
CHILD MORTALITY
EXCESSIVE HOT SUMMER

CHART I.

FOOD INSPECTION AND FOOD IN RELATION TO PUBLIC HEALTH.

G. KOEHLER, M. D.,
Assistant Commissioner of Health, Chicago, Ill.

Read before Food and Drugs Section, American Public Health Association, at Chicago, Ill., December 11, 1918.

"Why should not cities solve their milk problems as they have those of water supply?" queries Dr. Koehler. From the vital statistics of a metropolis he asserts relations between food inspection and typhoid and between pasteurization and infant mortality. He considers accurate information on dietetics a necessary health measure.

IT is well that health officials should from time to time check up on the relative value of their various activities. This is especially true when a health department, with insufficient appropriations, is confronted with an urgent demand to expand its work along certain lines, the health-saving values of which have been proven and well defined.

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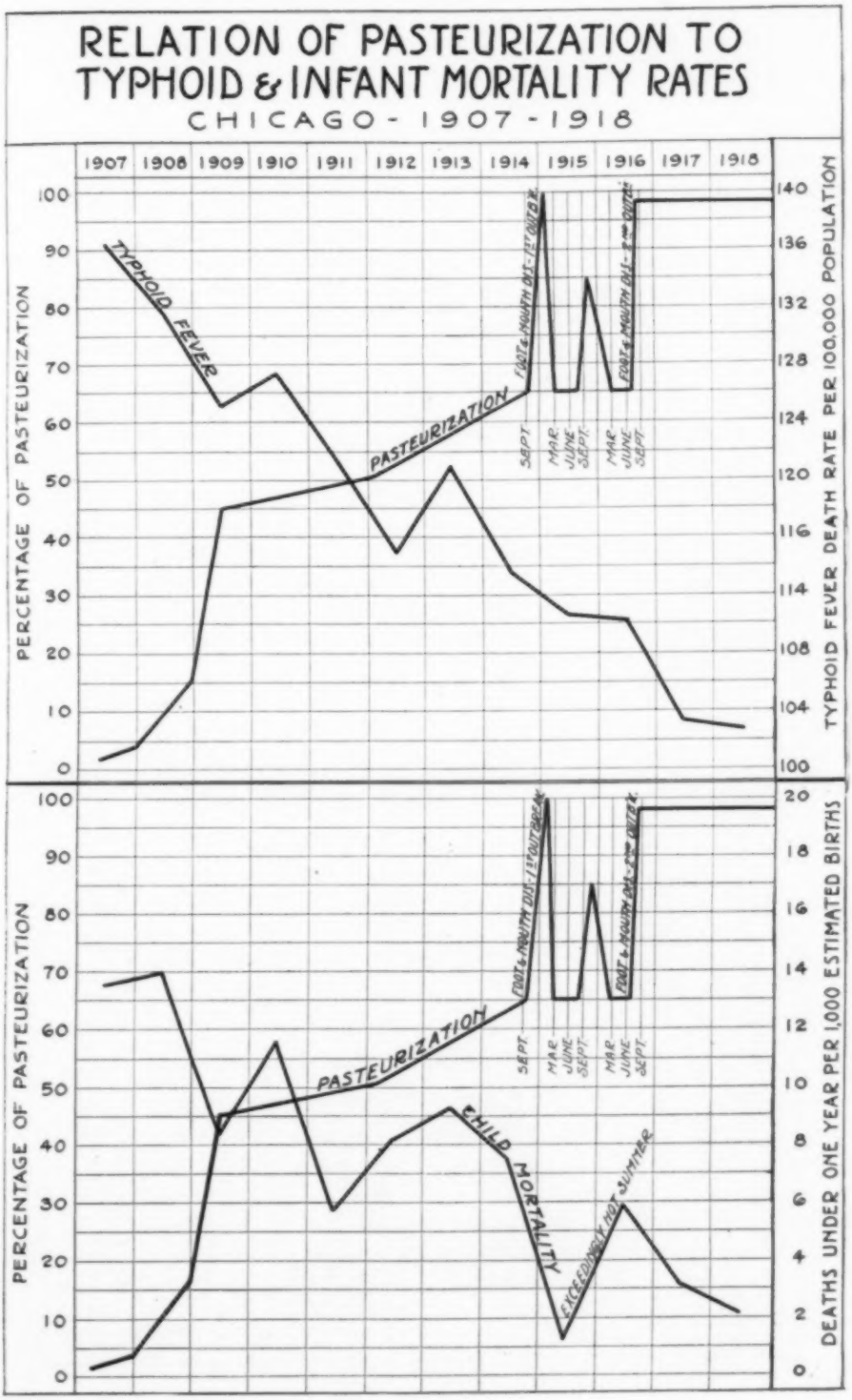
*Jour. A. M. A., Vol. 69, No. 2, p. 90.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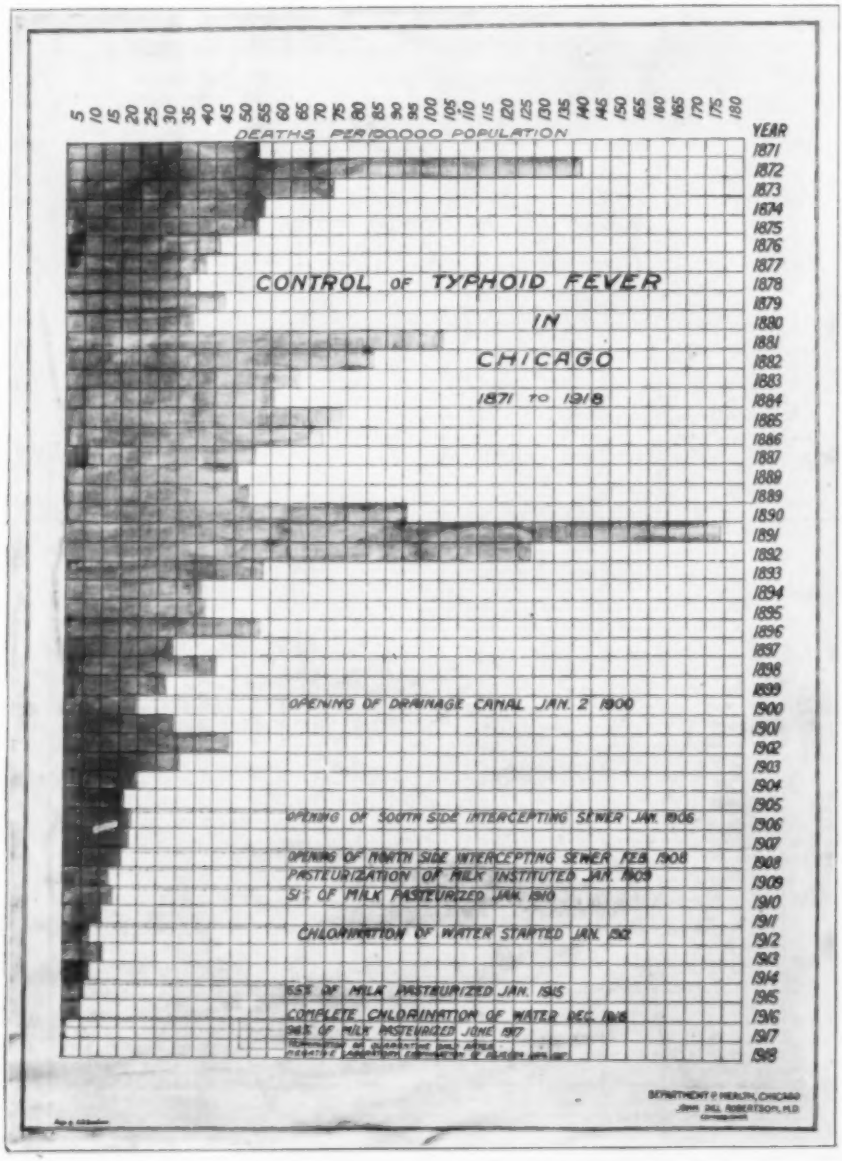
PASTEURIZATION
CHILD MORTALITY
EXCEEDINGLY HOT SUMMER

CHART I.

rants, and says that there is almost as much nonsense about "ptomaine poisoning" as there is about food adulteration. Milk he considers apart from other foods, and pasteurization is relied upon to render it safe. He does not mention meat inspection. If this is meant to be included in his program then surely the value of 1 per cent which he places on food sanitation is too low.

That well directed measures of food control, such as pasteurization of the milk supply, meat inspection at abattoirs, detection of disease carriers in food establishments, and sanitary measures tending to eliminate infection by human excreta,

CHART II


DEATHS PER 100000 POPULATION
YEAR
CONTROL OF TYPHOID FEVER
IN
CHICAGO
1871 TO 1918
OPENING OF DRAINAGE CANAL JAN. 2 1900
OPENING OF SOUTH SIDE INTERCEPTING SEWER JAN. 1906
OPENING OF NORTH SIDE INTERCEPTING SEWER FEB. 1908
PASTEURIZATION OF MILK INSTITUTED JAN. 1909
51% OF MILK PASTEURIZED JAN. 1910
CHLORINATION OF WATER STARTED JAN. 1912
85% OF MILK PASTEURIZED JAN. 1915
COMPLETE CHLORINATION OF WATER DEC. 1916
98% OF MILK PASTEURIZED JUNE 1917
DEPARTMENT OF HEALTH, CHICAGO
JOHN DILL ROBERTSON, M.D.

including transmission by flies, are of value, is evident from the results obtained by the employment of these measures.

In Chicago there has been no milk-borne epidemic of contagious disease since July 22, 1916, when an order was issued requiring all milk to be pasteurized. The relation of the infant mortality and typhoid fever death rates in Chicago to the percentage of the milk supply pasteurized each year is shown on Chart I, on page 419.

It is not claimed that pasteurization is responsible for all of the lives saved, nor can it be shown that the supplying of a pure milk alone is solving, or ever will solve, the infant mortality problem. The other important sanitary measures, such as diversion of the sewage and chlorination of the water supply, are shown in their time relation to milk pasteurization and to the typhoid fever death-rate in Chicago, on Chart II, page 420.

While it is true that the chart does not indicate definitely the rôle which pasteurization played in the total reduction of the typhoid fever death-rate, nevertheless the records show that milk-borne epidemics, so common when the milk was supplied raw, have occurred with diminishing frequency as the rate of pasteurization progressed and have ceased to occur since the entire supply has been pasteurized under health department control.

During the last nine years the Chicago Health Department has kept records charging every case of typhoid fever, diphtheria and scarlet fever to the milk dealer supplying the patient just before the onset of the disease. These records are carefully watched and whenever the cases begin to accumulate for a given dealer or plant, special field investigations are made to determine the cause. A compilation of the various food-borne epidemics thus discovered has just been completed for the octennial report of the Department of Health,* covering the period from 1911 to date. A summary of these epidemics is given in Table I, page 422.

The eight years' survey covered by this report gives a good opportunity to note the importance of food inspection in relation to infectious disease in a community.

During this period the food inspection, especially the milk inspection, carried on by the Department of Health, was extended and well systematized. The number of food inspectors was increased from 66 in 1913 to 85 in 1916, since which time the number of inspectors has been slightly reduced. The milk supply of all cases of diphtheria and scarlet fever, and the milk and food supply of all cases of typhoid fever reported to the department during this time have been carefully ascertained by the field health officers. Whenever an unusual number of persons suffering from these diseases was found to have a common milk or other food supply, the source of such supply has been reported to the Bureau of Food Inspection and subjected to searching investigation.

Inasmuch as milk has been the most common source of these food-borne outbreaks, they should be considered in their relation to the percentage of the entire milk supply pasteurized during these various years, as shown on Chart I.

In the list of food-borne epidemics, Table I, there is only one of diphtheria, with 16 cases, and none of scarlet fever. This is worthy of note because a special watch was kept during the period covered for milk-borne outbreaks of these diseases. Whenever scarlet fever or diphtheria were unusually prevalent in the city or any section thereof, special investigations were always made to determine if such outbreaks bore any relation to the milk

*Octennial Report of the Chicago Health Department, 1911–18.

TABLE I.

MILK OR FOOD-BORNE EPIDEMICS IN CHICAGO—YEARS 1911-1918, INCLUSIVE.

Approximate Date of Occurrence	Disease	Transmitted By	Source of Food Infection	Number of Cases	Remarks
A. June-July, 1911	Typhoid	Milk	Carrier on dairy farm.	71	Girl on dairy farm had typhoid fever in June, 1910
B. Dec. 1911-Jan. 1912	Streptococcus sore throat.	Milk	Streptococcus sore throat at country plants and on dairy farms. Garget among cows.	Total unknown: 384 found in city by special survey.	Inefficient pasteurization and possible reinfection at country plants.
C. April-May, 1913	Typhoid	Milk	Milk driver.	11	Cases on route of one driver.
D. October, 1913	Typhoid	Restaurant	Carrier working in restaurant.	48	Carrier found had history of an illness beginning August 10, 1913, which resembled typhoid fever.
E. October-November, 1913	Typhoid	Milk	Driver delivering milk had a mild attack of typhoid fever while at work.	48	Driver was in habit of wiping milk bottles with a rag which he carried.
F. March, 1914	Typhoid	Milk	Indefinite.	6	Milk driver was sick.
G. March-April, 1914	Typhoid	Milk	Case of typhoid fever.	5	Employe in dairy found sick with typhoid fever. Onset 3/22/14. Widal positive.
H. June-July, 1914	Diphtheria	Milk	Case of diphtheria in home of milk dealer and diphtheria carriers in plant among help engaged in handling milk.	16	Owner had diphtheria. Two helpers gave positive cultures.
I. July, 1914	Typhoid	Milk	Dairy farm.	8	Child with typhoid fever found on farm.
J. July-August, 1914	Typhoid	Milk	Unknown—probably milk bottles	5	Customer living above depot gave a history of typhoid fever and a positive Widal. Dirty bottles returned to milk depot from this home.
K. September, 1914	Typhoid	Milk	Not found.	29	Thirteen had been out of town.
L. September-October, 1914	Typhoid	Milk	Bottles from home where typhoid fever existed.	9	Patient from whose home infected bottles came was sick some time before typhoid fever was diagnosed.
M. February-March, 1915	Typhoid	Milk	Indefinite.	29	May have been due to improper sterilizing of milk bottles, removed from home where typhoid fever existed.
N. March-April, 1915	Typhoid	Food	Carrier	5	This carrier found to have been the source of infection of a number of isolated cases previous to this time.
O. October, 1916	Typhoid	Salad	Not discovered.	15	Of the fifteen cases 14 were girls and one a boy. Only diet in common, eaten by all fifteen, was a salad.

or food supply and only in one instance was such relationship definitely established.

No case of human infection with foot and mouth disease occurred in Chicago during the widespread epidemic of foot and mouth disease in this vicinity in the years 1914 and 1915. Only a few isolated cases of trichinosis have been reported during the last eight years.

The number of cases of food or ptomaine poisoning reported to the Health Department was comparatively small and not a single extensive outbreak was noted. These diseases were added to the list of reportable diseases on January 11, 1917. The observation of Jordan* that a large measure of uncertainty still exists in regard to the real source of cases of alleged food poisoning has been confirmed in the work of the Health Department.

*Jordan: Food Poisoning, 1917.

Rather than review the observations and theories in regard to the transmission of tuberculosis by milk and food, and the cause and effects of the deficiency of vitamins, and similar vital principles in foods, the relation of food to public health will be considered briefly.

Economic Considerations.—That food has an important bearing on health and vitality has been brought to our attention forcibly during the war. In this country the effect on public health resulting from the high cost of an essential article of food became a matter of concern when the price of milk was sharply advanced a little over a year ago. On October 1, 1917, the price was raised from 10 cents to 13 cents per quart in Chicago and immediately there resulted a marked reduction in consumption. Many families with small children substituted condensed milk for fresh milk. A survey made at that time showed reduced milk consumption in families with children residing in the more congested parts of the city, as follows:

MILK INVESTIGATION OF FAMILIES HAVING CHILDREN UNDER SIX YEARS—AMOUNT OF MILK USED BEFORE AND AFTER OCTOBER 1, 1917.

		Pints
1. Families investigated	215	
2. Total number of children	503	
Average number of children in family	2 to 3	
3. Children under six years	385	
4. Cut down on amount of milk—total families	105	
5. Amount cut down		167
Average amount cut down by each family		1 2/3
6. Families having children under 6 years of age cutting down on supply of milk	104	
7. Amount cut down by aforesaid		132
Average amount cut down per family		1.26
8. Substitutes employed:		
Nothing	7	
Tea and Coffee	74	
Condensed Milk	30	
Other	17	

Similar observations were made by the Health Department of New York City,* which in a survey covering 2,200 families made observations of reduced milk consumption as follows:

"The 2,200 families visited represented 12,439 individuals, of which 4,467 were adults, 2,534 were children from six to thirteen years old, and 5,438 were children under six years.

"The total amount of milk purchased by these families at the present time is 3,193 quarts daily; a year ago it was 4,797 quarts daily. This represents a decrease of 1,604. This decrease, to be sure, is slightly offset by an increased consumption of condensed milk, amounting, according to the survey, of 141 tins daily.

"Examining more closely the 1,480 families getting less milk than they did a year ago, we find over half of them (969) getting from 25 to 50 per cent less.

"Of the 120 families dropping milk entirely, 73 substituted canned condensed milk; 1,213 of the 1,480 families are substituting tea and coffee for milk.

"In the 2,200 families visited, 982 were encountered in which there were babies less than one year of age. Of these

"562 received less milk than in 1916;
316 received the same amount;
79 received more milk than in 1916;
25 dropped milk entirely."

In view of these facts it is evident that an excessive cost of milk is a matter of vital importance to the community. The public health is endangered when children and invalids are deprived of an adequate milk supply on account of prohibitive prices. This follows because the excessive price makes it practically impossible for the average wage-earner, with a family of three or four small children, to purchase the amount of milk necessary for their proper nourishment. Even if babies deprived of mothers' milk are allowed a sufficient quantity of cows' milk there is great danger of children between one and five years of age not securing sufficient quantities of milk necessary for their proper nourishment. A healthy child at these ages should consume about a quart of milk per day.

Furthermore, it is well known that milk is one of the essentials of the dietary of the sick and convalescent. This is especially true of persons afflicted with tuberculosis. When compelled to pay a high price for milk the average wage-earner is

*Weekly Bulletin of New York Health Department, Vol. 6, No. 44, Nov. 3, 1917.

left the choice of denying himself of this essential article of food or paying the price. In making this choice, oftentimes as a matter of necessity, the child or invalid will be denied the proper supply of milk.

Therefore, it seems proper that the departments of health should extend their control of the milk supply, which, heretofore, has consisted in efforts to conserve the purity and wholesomeness, to provisions for economic handling and distribution.

How this can be done is a matter that should be given careful consideration. Investigations made by numerous milk commissions within recent years of the various items of cost entering into the high price of milk paid by the consumer, have shown quite uniformly that these are due essentially to two factors, namely, the price paid to the producer and the great expense of city delivery. Over the former city health departments have no direct jurisdiction, but the latter is a proper subject for municipal regulation. Both might properly come under the control of state departments.

Under existing laws, if it can be established that the high cost of milk is detrimental to public health, and this can be readily shown, it should be possible to formulate the necessary ordinances regulating the manner of delivery so as to lessen the cost. Such measures would require the elimination of the principal cause of excessive cost in the existing system of delivery, namely the duplication of delivery service, by a system of coördination or consolidation. Williams* has pointed out the advantages of consolidation in the milk business as a whole.

In Chicago, where similar wasteful methods of delivery exist, the health department has proposed an ordinance to remedy these conditions. The main feature of the proposed ordinance is the licensing of milk dealers and milk stores to carry on the business indicated by their names, but which, under the proposed ordinance, would not have the right to engage in the delivery of milk. In addition, provision is made for the licensing of milk delivery companies operating in the entire city, or sections thereof, acting as common carriers, and delivering the products of all milk dealers in accordance with prescribed rules and regulations.

What has been said about the high price of milk to quite an extent also applies to certain other foods, the high retail price of which is largely dependent upon wasteful methods of marketing. This subject has been exhaustively studied within recent years by various official commissions which have almost unanimously found the high cost in part due to antiquated and wasteful methods of distribution.

The Massachusetts Commission on the Cost of Living* said: "Manifestly the most wasteful part of our economic system is that concerned with distribution."

The Chicago Municipal Markets Commission† concluded that "the solving of Chicago's market problem involves the elimination of costly, wasteful, cumbersome and antiquated methods."

Nourse,‡ in a comprehensive study of the Chicago Produce Market, emphasizes the burden of expense which is due to "poor location involving, as it does, high rents and costly hauling," inadequate equipment for handling goods and a slow and, therefore, costly method of selling.

How these conditions reflect upon the producers he sums up by the significant statement, viz: "What use is there in

*Williams Trans. 15. Internat. Cong. of Hygiene and Demography, Vol. 5, p. 128.

*Report of Massachusetts Commission on Cost of Living, 1910, p. 315.

†Preliminary Report of the Chicago Municipal Markets Commission, p. 11.

‡Nourse: The Chicago Produce Market, 1918.

producing foods in greater and greater abundance if there is no adequate system for distributing them to consumers?"

This whole problem is accentuated by the relinquishing by the U. S. Government of its emergency system of food control.

The local conditions, chiefly the cause for the costly methods of distribution, largely remain unsolved. These will help to maintain high prices and, as a result, the poor, including many afflicted with tuberculosis, will suffer from undernourishment.

It is more than likely that the fall in food prices expected after the war will be accompanied by a corresponding reduction in wage earning capacity, thus leaving the problem of high cost of essential foods relatively on the same basis.

In view of these facts, the problem of establishing more efficient and economical methods of marketing and distributing foods is a matter tending to conserve the public health.

Dietetic Questions.—Aside from the ill effects of insufficient quantities of foods upon health, there is the danger from overeating or improper balancing of rations. This is a matter deserving of greater consideration by health officials. It is to be deplored that more attention is not paid to proper guidance and control along these lines.

Cabot* has called attention to the fact that our efforts to prevent contagious diseases have nearly yielded their maximum results and that if further progress is to be made henceforth, attention must be given to the class of degenerative diseases, the death-rates from which are so markedly on the increase everywhere. If this task is to be done (and it should be) consideration must be given to the elimination of causes, which has been the method followed in contagious disease control. Diet, improper and not adapted to the digestive and eliminative capacities of the individual, doubtless plays an important rôle in the causation and progress of these diseases. Manifestly, the plan of attack is by educational propaganda. What is being done along these lines? Look at the popular bulletins of the various health departments for articles, aside from the occasional reference to pure milk for babies and cautions against overeating in holiday seasons, throwing light on these subjects.

There is a dearth of articles on dietetics and dietetic guidance in these publications aside from those treating of such stereotyped subjects as those enumerated above.

There should be a column of "Table Talk" in all popular health department bulletins. Pamphlets covering the subject in an accurate manner should be available and no effort should be lost to get such information in the public press when opportunity affords.

In these articles statements of generalities should give way to a setting forth of a few sound elementary principles. A "healthgram" such as "Chew Your Food, Your Stomach Has No Teeth" which was so successfully promulgated by the Chicago Health Department a few years ago, has more value than whole pages of generalities not founded on facts.

Conclusions.

The conclusions are only in part drawn from data set forth in this article. To avoid repetition, the more commonplace facts have been assumed or briefly summarized in the following conclusions:

1. The relation of food inspection to public health is shown best in the reduction of the frequency and extent of milk-borne outbreaks of typhoid fever, scarlet fever and diphtheria after the efficient pasteurization of the milk supply.

2. Similarly, it can be quite conclu-

Am. Magazine, Vol. 82, Nov., 1916, p. 15.

sively shown that milk pasteurization is in part responsible for lowering the infant mortality rates.

3. The infection of foods by excreta and carriers of contagious disease is an important public health problem and one that has not been solved by the routine sanitary inspection of food establishments.

4. It is difficult to determine the exact health conservation value of many of the phases of food inspection other than those enumerated above. Apparently much of this work has no demonstrable effect on public health and is carried on for esthetic reasons. For example, the inspection of natural ice. Here the danger of transmitting disease from pollution at the source of production is practically nil when the ice comes to market after a period of storage for about three months, yet such sewage-laden ice, even though harmless, is absolutely undesirable. Much less can be said in favor of certain other lines of inspection, such as the condemnation of rotten fruits and vegetables. Here the people, unless blind, have the means of protecting themselves against the unhealthful effects, but not against bad bargains.

5. Food conservation and measures helping to lower the cost of food to the consumer belong in the general program of health conservation. The danger to health resulting from the high cost of milk is so obvious that health officers are justified in taking immediate steps to insure their cities an ample supply at the lowest possible cost consistent with the economic factors underlying production and the maintenance of sanitary standards. Cities have solved their water supply and other public service problems. Why should not the milk supply question be solved in the same manner? The solving of this question will necessarily lead to the formulation of principles and definition of legal powers which can then be applied to the solution of other economic problems of food supply and distribution.

6. Accurate and reliable information should be given to the public in regard to dietetics. Proper quantities and proportions of food stuffs, especially in the diet of infants and children, are as important as a wholesome supply and, therefore, instruction along these lines is a necessary public health measure.

Mouth Hygiene.—The relationship between a clean mouth and good health is a well established fact. It was only after many serious systemic disturbances were traced to diseased teeth, that the importance of oral hygiene became recognized. Dental caries is the result of the acid formed from the fermentation of food that remains between the teeth. The acid causes the formation of a starting point for a cavity. The cavity grows in size as a result of further fermentations, and serves for a pocket for all kinds of germs. Eventually the dental pulp is attacked, causing severe pain, resulting as a rule in an abscess.

Dental caries can be avoided by practicing several simple rules. It is important to masticate the food thoroughly. The mastication gives the teeth the necessary exercise, and in addition serves to clean them. The other rules for the care of the teeth consist in the correct and frequent use of a properly shaped tooth brush, and the use of silk floss. The teeth should be cleaned after each meal and also before retiring at night. If silk floss is not available, ordinary white cotton will serve the same purpose.—Edwin K. Kent, D. M. D., *The Commonhealth*, Feb., 1919. (*M. P. H.*)

Fly Poisons.—The authors describe extensive research on ways and means to abate the fly nuisance. The practical conclusions are that castor oil and arsenic are the best fly killers. Castor oil containing a little sugar attracts the flies, and they die in and around it. Its action is enhanced by adding 20 drops of croton oil to 30 gm. of the castor oil. The fly dies almost instantly, while the oil is not dangerous for man. The odor of sugar and the odor of decomposing milk, flesh, or blood, seem to attract flies most powerfully.—G. Boyé and R. Guyot.—*Bulletin de l'Académie de Médecine*, 81, Jan. 21, 1919, *Jour. A. M. A.*, 72, 900 (1919).

(*D. G.*)

RELATIVE VALUE OF CULTURAL AND INOCULATION TESTS FOR DETECTION OF *B. TETANI*.

IDA A. BENGTSON, *Bacteriologist, United States Public Health Service,*
AND
G. W. MCCOY, *Director, Hygienic Laboratory.*

Read before Laboratory Section, American Public Health Association, at Chicago, Ill., December 11, 1918.

These authors call attention to the fact that the "safety test" used in the detection of *B. tetani* is not quite so "safe" as the cultural test.

IN THE testing of vaccine virus for the detection of the presence of the tetanus organism it is customary to use cultural tests and at the same time to inoculate a guinea pig subcutaneously with a quantity of the virus without preliminary cultivation. The latter is usually spoken of as the "safety test."

In connection with attempts to standardize the testing of vaccine virus we have conducted a number of experiments to determine the relative value of the two methods of testing and wish to record here the results of the observations.

Francis* found that tetanus spores in pure cultures, when injected subcutaneously into guinea pigs, did not give rise to tetanus symptoms, but that the spores could be activated by staphylococci or quinine injected later at the former site of inoculation, or injected at the same time in another part of the body. It might be expected that vaccine virus, which is often contaminated with staphylococci, especially before it has been glycerinated for a sufficient length of time, would stimulate to growth tetanus spores if such were present, with the production of toxin and consequent manifestation of tetanus symptoms in the animals.

Our tests have been carried out to determine whether this occurs as frequently as the production of toxin in plain broth media, equal amounts of vaccine virus contaminated with approximately the same number of spores being used in both the cultural and the animal tests.

Our purpose has been to use a small number of tetanus spores for artificially contaminating the virus with the idea of simulating natural conditions, *i. e.*, vaccine virus if contaminated at all with *B. tetani* would in all probability contain very few tetanus spores. This is known from experience. Tetanus following vaccination with vaccine virus is of very rare occurrence relative to the number of vaccinations and among the few cases on record, it has been difficult or impossible in most of them to establish the fact that infection occurred through the vaccine virus itself. It was also thought that more consistent and informing results would be obtained with a fairly definite and small amount of contamination than with indefinitely large doses.

In order to determine approximately the number of tetanus spores most favorable for artificially contaminating the vaccine virus, for the purpose of the tests, preliminary "titrations" were made by planting a series of plain broth fermentation tubes with varying amounts of the suspension of spores used. The highest dilution of the original suspension which gave constant growth in all of the tubes planted (usually five or six) was the one used, as a rule, in the tests. This was

* Hygienic Laboratory Bulletin No. 95.

varied in certain of the tests, dilutions above and below the most favorable being used also.

Our first experiment was performed by inoculating guinea pigs subcutaneously with suspensions of tetanus spores in dilutions of 1/100,000 to 1/1,000,000 mixed with vaccine virus, and at the same time seeding plain broth fermentation tubes with the same dose of the mixture of spores and vaccine. None of the six guinea pigs used in the test developed symptoms of tetanus during the ten days they were held under observation, while of the eighteen fermentation tubes inoculated with the mixture practically all showed the development of *B. tetani* as shown by the appearance of the growth in fermentation tubes and by the inoculation of mice.

A portion of virus contaminated with the tetanus spores was stored at 15° C. and also at 37° C., and tests made at the end of 7, 12 and 19 days' storage, using again the direct inoculations and the cultural tests, and in every case the former failed while practically all of the latter showed the presence of tetanus toxin. This test demonstrated that storage under the conditions mentioned did not lead to the development of toxin or such multiplication of the tetanus organisms as to make it possible to detect them by direct inoculations.

Further tests to determine the relative sensitiveness of the two methods were made, in which suspensions containing lower dilutions of tetanus spores as well as the high dilutions used before were mixed with vaccine and the mixtures used for both direct inoculation and cultural tests. The results are shown in the following table:

Dilution of Tetanus Spores Mixed with Vaccine Virus (1 cc. of Mixture Used for Inoculations and Cultural Tests)	Guinea Pigs Direct Inoculation	Guinea Pigs or Mice Inoculated from Cultures Incubated 10 Days
$\frac{1}{1,000,000}$ cc.	A. Remained well	G. P.—A. 0.001 cc. of culture; tetanus symptoms
	B. Died in 13 days, without symptoms	G. P.—B. 0.001 cc. of culture; tetanus symptoms
$\frac{1}{100,000}$ cc.	A. Remained well	G. P.—A. 0.001 cc. of cultures; tetanus symptoms
	B. Remained well	G. P.—B. 0.001 cc. of cultures; tetanus symptoms
$\frac{1}{10,000}$ cc.	A. Died in 3 days, without symptoms	G. P.—A. 0.001 cc. of cultures; tetanus symptoms
	B. Died in 6 days, without symptoms	G. P.—B. 0.001 cc. of cultures; tetanus symptoms
$\frac{1}{1,000}$ cc.	A. Tetanus symptoms	Mouse A. 0.1 cc. of cultures; tetanus symptoms
	B. Tetanus symptoms	Mouse B. 0.1 cc. of cultures; tetanus symptoms
Control, 1/1,000 cc. spores, without vaccine	A. Tetanus symptoms, 2 days	.....
	B. Died in 5 days, without symptoms	.....
Control, vaccine virus, 1 cc. without spores	Mouse A. Remained well	.....
	Mouse B. Remained well	.....

This experiment indicates that the cultural test followed by inoculation of animals will detect one one-hundredth the number of tetanus spores that is shown by direct animal inoculation without preliminary cultivation.

While it was felt that the above data were sufficient to justify an opinion that the so-called "safety test" was not so delicate or reliable as the cultural test followed by the inoculation of animals, it seemed desirable to secure a larger volume of evidence. Accordingly, arrangements were made with a manufacturer of vaccine virus to furnish a sample of about 30 cc. of glycerinated virus from each calf used for the production of virus. A portion of the material from each animal was contaminated with a quantity of tetanus spores large enough to be detected regularly by cultural methods as determined by the method described above. Two cubic centimeters of the mixture were used for the inoculation of each of five freshly steamed fermentation tubes of plain broth and the same quantity used to inoculate a guinea pig subcutaneously.

The results of the test are shown in the following table:

Vaccine No.	Results of Direct Inoculation of One Guinea Pig from Each Mixture without Previous Incubation in Culture Media	Results when Mixtures Were Subjected to Preliminary Cultivation and Later Injected into Mice						
		Fermentation Tube						
		1	2	3	4	5	pos.	neg.
1	Remained well	+	+	−	+	+	4	1
2	Remained well	+	+	+	+	−	4	1
3	Remained well	−	+	+	+	+	4	1
4	Died 5 days; symptoms not observed	+	−	+	+	+	4	1
5	Developed tetanus	+	+	−	−	+	3	2
6	Remained well	+	+	+	+	+	5	0
7	Died 48 hours; symptoms not observed	+	+	+	+	+	5	0
8	Remained well	+	+	+	+	+	5	0
9	Died 4 days; symptoms not observed	+	+	+	+	+	5	0
10	Remained well	+	+	+	+	+	5	0
11	Died 4 days; symptoms not observed	+	+	+	+	+	5	0
12	Remained well	+	+	+	+	−	4	1
13	Died 4 days; symptoms not observed	+	+	−	+	−	3	2
14	Died 4 days; symptoms not observed	+	+	+	+	+	5	0
15	Died 9 days; symptoms not observed	+	+	−	+	+	4	1
16	Remained well	+	+	+	+	+	5	0
17	Died 24 hours; no symptoms observed	+	+	+	+	+	5	0
18	Remained well	+	+	+	+	+	5	0
19	Died 4 days; symptoms not observed	+	+	+	+	+	5	0
20	Remained well	+	−	+	−	+	3	2
21	Remained well	+	−	−	−	+	2	3
22	Developed tetanus	+	+	+	+	+	5	0
23	Remained well	+	+	+	+	+	5	0
24	Developed tetanus	+	−	−	+	+	3	2
25	Remained well	−	−	−	+	+	2	3
26	Remained well	+	+	−	+	+	4	1
27	Remained well	+	+	+	+	−	4	1
28	Died 5 days; symptoms not observed	+	−	+	+	+	4	1
29	Remained well	+	+	−	+	+	4	1
30	Died 8 days; symptoms not observed	+	+	−	−	+	3	2
31	Remained well	+	−	−	−	+	2	3
32	Remained well	+	+	+	+	−	4	1
33	Remained well	−	+	−	+	−	2	3
34	Remained well	+	−	−	+	−	2	3
35	Remained well	+	−	−	+	−	2	3
							137	38

This table shows that in but three of the 35 samples was tetanus certainly detected by the direct animal inoculation, the so-called "safety test," while there was not a single failure to detect when cultivation in steamed plain broth tubes by the method used preceded the animal test.

In the case of fourteen of the mixtures subjected to preliminary cultivation all five tubes showed the presence of tetanus toxin as demonstrated by the mouse test, ten mixtures showed positive results in four out of five tubes, five mixtures in three out of five tubes, and six mixtures in two out of five tubes.

In these tests advantage has been taken of the fact that guinea pigs are more susceptible to the action of tetanus toxin than mice. Guinea pigs were used for the direct inoculation tests while mice were used as the test animal for the cultural tests. It is doubtful whether very many, if any more positive results would have been obtained if guinea pigs had been used for the cultural tests, but conditions were made as favorable as possible in the case of the direct inoculation test by using the more susceptible animal.

It is true that the results obtained in the above table are not altogether comparable since the fermentation tubes were planted with each of the vaccine mixtures and only one animal was subjected to the direct inoculation test. Obviously, the number of positive tests by the direct animal inoculation method might have been increased by using a larger number of guinea pigs for each vaccine, but, even conceding this, it is quite evident that the advantage is considerably in favor of the culture method.

Out of the 35 animals tested by direct inoculation

21 remained well (negative tetanus),
11 died without symptoms,
3 developed tetanus.

If five times the number of animals had been used, proportional results would have given

105 remaining well,
55 dying without symptoms,
15 developing tetanus.

Comparing these figures with those obtained with fermentation tubes (137 positive for tetanus, 38 negative for tetanus) it is apparent that the culture method gives a much higher proportion of positive tests.

Another decided advantage of the culture method lies in the fact that if indefinite symptoms are obtained on the first inoculation of animals, other animals may be tested with larger or smaller doses from the same culture tube, or control tests may be put on with antitoxin.

In view of the uncertainty of the direct inoculation test of animals it would seem necessary to inoculate a series of several animals, if this method is used, in order to arrive at any definite conclusion in regard to the possible contamination of the vaccine virus by tetanus spores, while by the culture method it may be possible to decide by inoculating one animal from a tube showing the characteristic appearance for tetanus growth. It is advisable, however, to inoculate from all tubes which may show gas in the closed arm, or growth even without gas.

HOSPITAL FOOD NEEDS.

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Read before Food and Drugs Section, American Public Health Association, at Chicago, Ill., December 9, 1918.

There are eight classes of men in the military hospital including attendants, and for each class there should be a different dietary. Major Hoskins explains this, tells clearly the common sources of waste of food, notes the amount, and suggests lines of conservation.

THE problem suggested in the caption of this paper presents itself in a somewhat different form in military than in civil hospitals. The chief difference lies in the fact that the military hospitals do not have to deal to any marked extent with several of the diseases which most tax the ingenuity and patience of dietitians in civil institutions because men developing such diseases are soon discharged on certificates of disability. Diabetes mellitus and chronic interstitial nephritis, for example, are seldom seen. Also, the proportion of men practically well and merely waiting for discharge from the hospital is unusually high; this includes surgical and other convalescents who, in civil life, would be sent to their homes but who are not yet ready for barracks life. In the overseas hospitals there is, of course, a high proportion of acute surgical cases, but this paper will consider conditions in the hospitals in this country only.

Another difference between civil and military hospitals which has a bearing upon nutritional problems is that in the latter a much more rigid discipline is feasible than in the former. Along with this is a grim determination upon the part of nearly all the patients to bear without complaint whatever Fate sends. Accordingly a high degree of arbitrary control is feasible.

Still another difference lies in the attitude of military and civil hospital authorities toward the patients. A civil hospital is frequently solicitous that life in the institution be made as pleasant as possible for reasons somewhat apart from therapeusis. In military hospitals, on the other hand, such solicitude is neither desired nor desirable. The chief desideratum is to get the patient out of the hospital and back to work as soon as possible. Any attitude of making the hospital a haven of peace and rest would be, from a military point of view, indefensible. On the other hand, it goes without saying, that no violation of humanitarian principles would be justified. This would be likely, in fact, by retarding convalescence, to violate the principle just mentioned.

With these modifying conditions in mind anyone familiar with the food needs of similar institutions outside the Army, could practically deduce his own answer to the problem of military hospital food needs. These needs are in general much the same as those of any institution feeding large numbers of men, namely, a variety of the ordinary foodstuffs in adequate quantity, plus a somewhat generous supply of fruits, eggs, fresh milk and cream and, possibly, lactose for forced feeding. This latter, as yet, however, is little used.

A statistical study of the consumption of various food materials in all the hospitals of the country is, for military and other reasons, not practicable, but a general quantitative idea of the matter

can be given. In Table I are listed the amounts of various standard foods consumed in one average base hospital during the period of a survey.

TABLE I.

FOOD CONSUMPTION IN A BASE HOSPITAL.

	Consumption for one week.	Pounds per man per day.
	Lbs.	
Bread	7,120	.273
Potatoes	5,544	.212
Beef	5,555	.212
Fish	613	.023
Milk (fresh)	9,483	.363
Milk (evaporated)	2,775	.106
Oranges	723	.028
Beans, dry navy	258	.010
Sugar	3,085	.118
Tomatoes (canned)	570	.022
Peaches (canned)	630	.024

Total number of different commodities used, 98.

In Table II are included data regarding food supplied to the individual patients in the base hospital above mentioned.

TABLE II.

THE FOOD SUPPLIED FROM THE KITCHENS TO THE PATIENTS ON REGULAR, LIGHT AND LIQUID DIETS.

	Grams.	Calories.	Calories, per cent.
Regular Diet:			
Protein	130.9	537.0	15.26
Fat	130.4	1,212.0	34.49
Carbohydrate	430.8	1,766.0	50.25
Total	692.1	3,515.0	100.00
Light Diet:			
Protein	70.8	290.0	12.43
Fat	56.7	527.0	22.57
Carbohydrate	370.1	1,518.0	65.00
Total	497.6	2,335.0	100.00
Liquid Diet:			
Protein	31.1	128.0	13.86
Fat	36.9	343.0	37.34
Carbohydrate	109.5	449.0	48.80
Total	177.5	920.0	100.00

By common consent the military hospitals are entitled to preferential treatment in the distribution of commodities. The difficult problems involved in feeding the individual patients are, therefore, not for the most part problems of supply but of preparation and distribution. It is with the latter that this paper will chiefly deal.

To understand what follows one should have in mind the general plan of organization of the base hospital mess. The final local authority in this as in all other matters resides, of course, in the commandant. Directly under him is the mess officer, usually either an experienced hotel manager, or a former army mess sergeant, commissioned in the Sanitary Corps. Associated with him, sometimes under his immediate direction and sometimes directly under the commandant, is the dietitian. She usually has one or more assistants. The dietitians are for the most part women who have had courses of training in domestic science but who often have had little or no previous training in hospital work. The mess officer has the assistance of several sergeants who deal with such matters as supplies, accounts, and kitchen and dining room management. Separate messes are typically maintained for sick officers, nurses, enlisted sick men, and hospital corps men. The segregation of these two latter classes, however, is often incomplete,—a fact which gives rise to the difficulties inherent in an attempt to feed normal men and patients from the same menus. For all these messes a corps of cooks, kitchen police and orderlies is provided. The officers' mess, proper, and the nurses' mess are usually quasi-independent institutions in which, however, the mess organization takes a benevolent and coöperating interest.

In theory, at any rate, dietetics is a branch of therapeutics and each soldier in a hospital should receive the particular diet best adapted to his case just as he should receive individualized therapeusis in other respects. Practically, however, conditions have not as yet permitted anything very closely approaching this ideal. It is true that occasional special diets are encountered, most frequently in gastro-enterologic wards, but for the

most part conventional "liquids," "lights," and "regulars" are provided for the men in large groups with, in some cases, "softs" interposed between the "liquids" and "lights," especially for the surgical convalescents. This is not an ideal state of affairs but under existing conditions is probably as satisfactory as can be hoped for. The problem then resolves itself into one of best utilizing this system to secure for each patient a diet as well suited as possible to his individual needs.

As to the liquid diets little need be said. They are ordinarily used for but a short period, and, from a nutritional point of view, often amount to little more than agreeable fluids. A certain amount of milk, however, although dietetically a solid, is included and this, together with sugar, does have a considerable food value.

Light diets come in for a greater degree of attention. In the larger hospitals the devising and preparing of these are largely in the hands of the dietitians. The word *light* in this connection, incidentally, is ambiguous; to some it has the connotation of *easily digested;* to others it means *low* in *caloric value*. It is usually interpreted by the dietitian as meaning both. Conditions would be more intelligently met if the requisitions from the various wards would specify the approximate number of calories desired and the distribution of these among the food components. In other words, the dietitian should be placed in a position closely analogous to that of the hospital pharmacist rather than made, as she actually often is, the senior consultant working under the handicap of never having seen or heard of the individual patient for whom she is prescribing. As a labor-saving device the light diet is often made up largely from the regular, and may be merely the latter with some one dish omitted. In such cases the "lights" are likely to have most of the deficiencies of the "regulars" which are, in fact, often devised by men with no technical training in dietetics, whatever. All sorts of menus have been seen under the caption "lights" from very attractive, well-balanced meals to mere impromptu bowls of corn flakes soaked in milk and served with second rate warm coffee. On the whole, however, the light diets are fairly satisfactory so far as in a plan of wholesale feeding they can be made satisfactory.

The least satisfactory of the various diets are the "regulars." These are commonly compiled by the mess officers or the mess sergeants who frequently have no adequate conception either of the technical problems involved or the proper methods of solving such problems. One of the most common sources of inadequacy is the custom in various hospitals of feeding hospital corps men,—guards, attendants, etc., the same meals as those served to the patients. The suggestive effect of the knowledge that the meals are to be consumed in part by normal men at work usually results in the planning and preparation of the meals in the interests of them rather than of the patients. One can most charitably ascribe to this cause the inclusion of such comestibles as corned beef and cabbage or pickled pigs' feet in menus intended for supposedly sick men.

In the hospitals in which the plan of feeding the corps men and patients the same meals is in vogue, one can differentiate at least eight classes of individuals. These are:

1. Normal men at fairly hard work requiring some 3,500 calories daily.

2. Ward attendants, normal men at sedentary work, requiring about 3,000 calories.

3. Ambulant patients, metabolically normal, requiring 2,600 calories.

4. Similar patients spending some time out of bed but confined to the wards, and requiring 2,200 calories.

5. Bed patients metabolically normal, requiring about 1,800 calories.

6. Sub-acute febrile patients (empyemas especially) needing high calorie and high protein feeding.

7. Other convalescent patients of various sorts needing generous feeding but, from lack of appetite, eating sparingly.

8. Patients having constipation and needing an especially laxative régime.

The mere enumeration of these classes suffices to indicate the futility of attempting to feed them properly from a single menu. It seems to be felt that the food consumption of the first five classes will be sufficiently regulated by appetite. Actual observation, however, discloses relatively little difference between the consumption of the men needing 1,800 calories and those needing 3,500. These men have the habit of eating to repletion and the habit is generally persistent. This habit should be recognized as a common factor and meals planned accordingly. Although in one hospital a plan was being considered of dealing out to each man the definite quantity of food needed to furnish his quota of calories, it needs no prophet to foresee tribulation for all concerned in the plan. There is a strong tradition in the American Army that every soldier should at all times have all he wants to eat. The judicious method of meeting the conditions is to regulate the diets qualitatively rather than quantitatively. A proper distribution of "concentrates" and of "extenders," with particular attention to attractive meat substitutes and light vegetables and desserts, solves the problem. I believe that it can safely be stated that the highest food waste in the hospitals comes about from the over-use of concentrates. This may average 500 calories per man daily, and completely overshadow all efforts toward food conservation. It is an invisible waste that the conservation officer does not detect but is none the less real. In case of the sub-acute febrile patients, a special effort is often made to supply adequate feeding by the use of egg noggs, etc., between meals. This class of patients, together with the convalescents with poor appetites, should receive menus planned especially for attractiveness and high caloric content. As regards the last class, the constipated, more or less adaptation is frequently encountered in that fruits and fresh vegetables are utilized freely. More attention, however, could profitably be paid to the matter. It should be kept in mind that one of the most important drainage tubes which the surgeon has at his disposal is the colon.

In view of the fact that the expenditure for each patient is limited and that fruits and other necessary commodities are high in price, the matter of eliminating waste becomes an important element in the hospital food problems. The adequacy of control varies within wide limits. In one case, the writer observed 1,660 pounds of garbage—a 24-hours' accumulation—in a hospital feeding 823 men. In another hospital in which a survey was made by the Division of Food and Nutrition, Medical Department, the waste amounted to 1,893 pounds, or over a pound per man per day. As illustrating the effectiveness of the efforts of the survey parties, a paragraph from the official report may be quoted:

A summary is given below of the waste of edible food from the hospital kitchen, dining room, and wards. The figures include the waste from all of the diets which were studied and are grouped in averages of three-day periods:

	1st 3 days.	2d 3 days.	3d 3 days.	4th 3 days.	5th 3 days.	6th 3 days.	Last day.
Pounds of edible waste	1.093	1,009	1,025	618	497	477	437
Pounds of food saved	....	684	668	1,075	1,196	1,216	1,256

So much for high wastage. In another hospital in which a conservation officer was systematically utilized the edible

waste for the month of July, 1918, was held down to an average for the whole institution of .4 ounce per man per day, or less than 3 pounds per 100 men. The technique for effecting this low wastage is relatively simple. It consists merely in serving small initial helpings, with reservings to whatever extent is desired, and an enforcement of the "clean plate rule." If the cookery is reasonably good and the patient has the option of declining any given viand which he does not desire, he can properly be required to eat everything on his plate. This in itself does not sound like effective conservation, but the man himself can be trusted to supply the corollary—to take no more than he wants.

In addition to those discussed, there are various other difficulties involved in maintaining a satisfactory food supply to the individual patients. Finding, or better, training and keeping an adequate supply of cooks and mess sergeants has in some hospitals been a very trying problem. At times it is difficult to secure the nice adjustments demanded when a woman dietitian without military status, a mess officer previously a hotel manager, and an old army mess sergeant are required to coöperate in the same kitchen. The problem of conveying hot food from a kitchen to a ward a half mile away presents certain technical difficulties.

But time does not serve to go into a detailed discussion of such matters of technique. The major question is, of course, do the hospitals receive an adequate supply of commodities necessary to the proper feeding of the patients. To such a question the answer is, with few exceptions, in the affirmative.

NORTH CAROLINA SCHOOL DENTAL CLINIC.

Under the system of free dental clinics in North Carolina, the children are assembled at the schoolhouse or other convenient place. This group was brought together at the Saratoga School, Wilson Co.

THE SCORING OF HEALTH ACTIVITIES IN CITIES OF NEW YORK STATE.

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Read before Public Health Administration Section, American Public Health Association, at Chicago, Ill., December 9, 1918.

A helpful report of progress in an official New York State test. It shows defects in current practices, emphasizes the relationships of budget to results, notes the value of spot maps, and dwells on the importance of all public health education.

THE scoring of health activities in cities, as carried out in New York State during the past year, is in effect a survey. From it we have secured a fund of valuable information. The object in which we were chiefly interested, however, and which in large degree has been attained, was a stimulation of interest and activity on the part of the municipal officials, through calling attention directly to essential activities and stirring a friendly spirit of competition.

The plan was evolved and the original draft of a score form drawn by Dr. F. M. Meader, director, Division of Communicable Diseases of the New York State Department of Health. The preparation of the score sheet was completed and the scoring begun under the direction of the writer, acting in Dr. Meader's absence in military service.

No claim is made to perfection in the completed score form. The relative values ascribed to the various health activities have been established more or less arbitrarily and possibly will not stand scientific analysis. However, they represent what we believe to be the approximate relative values of the various kinds of activities to the cities of New York State.

Experience with the score has brought out a number of defects, some of which were anticipated and all of which we will endeavor to correct in revising the form.

The cities to which the score was designed to apply are 59 in number, classified according to population as follows:

Second class, population 50,000 to 175,000	7
Third class, 10,000 to 50,000	42
Third class, under 10,000	10

One of the most difficult of our problems was that of preparing a score adaptable to cities varying in population from less than 10,000 to 175,000. The fact that our average total scores are highest for the group of larger cities, and decrease in direct ratio with decrease in population, suggests that the score was not sufficiently flexible for use in both large and small cities. This will be discussed more in detail presently.

THE SCORE FORM.

The following are the general divisions of activity with the value assigned to each, the total perfect score being 1,000:

1. Communicable diseases.	
A. Tuberculosis	60
B. Other than tuberculosis	80
2. Laboratory facilities, local or state, fully utilized	80
3. School inspection	85
4. Infant and maternal welfare	90
5. Milk and food inspection	80
6. Water supply	90

7. Sewage, garbage and manure	80
8. Record keeping	90
9. Public health education	100
10. Appropriation	100
11. Enforcement of regulations regarding barber shops, common towels and eating and drinking utensils	20
12. Special work along new or unusual lines or especially efficient work or good results with old methods	35

Most of these general headings are subdivided and relative values assigned to each subdivision.

Scoring.

It was originally planned to have each of our 15 districts sanitary supervisors score the cities in his district. In view, however, of the obvious difficulty of securing a fair and comparable rating under such an arrangement we ultimately selected one supervisor, Dr. Chas. C. Duryee, to visit each city and make the scores. Dr. Duryee was peculiarly fitted for the work assigned to him. Not only is he a man of tact and good judgment, but he has been, at different times, health officer and mayor of a city of the second class, and as a member and one of the founders of the New York State Conference of Mayors, has a wide acquaintance among the mayors and other public officials.

The general plan has been for Dr. Duryee, in visiting a city for the purpose of scoring it, to take with him the supervisor of the district. In scoring, each detail was discussed with the local health officer, and the completed score was signed by them together. Wherever possible the score was then taken up in detail in conference with the mayor and other city officials, at times including the board of estimate and apportionment. Good work was commended and defects were pointed out.

Practically without exception the mayor and other officials evinced a decided interest in the various details, admitted and showed a desire to overcome shortcomings, and were anxious to know how their cities compared with others.

The Scores.

The following are averages of scores, on the basis of 1,000, for different groups of cities:

Population.	Average Score.
1. 175,000–50,000 (Second Class)	801.5
2. 50,000–20,000	750.
3. 20,000–10,000	622.2
4. Under 10,000	565.5

As already noted, the average total scores of the groups is highest for the group of cities of over 50,000 population, and grows progressively less with decline in population, the group of cities under 10,000 having the smallest scores. Between the average for the second class cities and that for the group with population from 20,000 to 50,000, the difference amounts to but 51 points. Between the average for the largest group and that for the smallest there is a difference of 236 points.

The scoring of the smaller cities with the larger was undertaken as an experiment. A detailed comparative study of scores of the larger and smaller cities for the various groups of activities, leads the writer to these conclusions:

The smaller cities lose a few points, possibly 30 through defects in the score form. Otherwise the scoring system is sufficiently flexible so that it could be "stretched to fit" the smaller as well as the larger cities, if it could reasonably be expected that the smaller cities would spend as much per capita for public health as the larger and maintain equal standards of excellence.

For instance the score of many cities of approximately 10,000 population suffers because they have no public health or school nurse; because of failure to provide for efficient control of communicable

diseases; because of failure to take advantage to the fullest extent of facilities offered by the state laboratory; because of failure to provide milk and food inspection; or to properly safeguard water supplies, etc. The score under the item "appropriation" shows that the group of cities of approximately 10,000 population or less averages about 25 cents per capita, as compared with 45 cents for the 3 largest third class cities and approximately 36 cents for the second class cities.

Inasmuch as the standards are not yet the same, we have concluded that it is not practicable to attempt to score all upon the same basis. The present scoring system, when its defects have been corrected, will be adapted for use in cities of over 20,000 population. The scoring of cities of less than 20,000 should continue but upon a modified basis. In the latter group, particularly, education should be more strongly emphasized.

We have frankly admitted to city officials that the scoring is an experiment, but there is now no question in our minds regarding its value. Because of defects discovered in the course of scoring, some of the scores may be open to criticism. Our present plan is to furnish mayors and health officers with a tabulated score of all cities—at least of those in their "population" groups, but to give no publicity for the present to the comparative scores.

Observations and Results.

Some of the following observations and comments, under various activity headings, may be of interest to those concerned in municipal health administration. They are made with the general reservation that some of them represent personal opinions of Dr. Duryee and of the writer.

Communicable Diseases.—There is a growing appreciation of the value of the services of public health nurses, enhanced by experience during the influenza epidemic. In small cities, under ordinary conditions, it is practicable for the nurse to divide her time between tuberculosis, general communicable disease control and child welfare work, the amount of time given to each depending upon season and local conditions. It might be well, in larger cities, to have nurses in various special lines of work exchange duties from time to time, both on account of the educational effect and because all will then be prepared for assignment to any of the various kinds of work in an emergency.

In many cities communicable diseases, especially the so-called "minor" diseases, are poorly reported. In only a few do heads of households report, when no physician is in attendance, as required by the state sanitary code.

While in most larger cities "quarantines" are established promptly and enforced more or less efficiently, in scarcely one was any efficient investigation made to determine and eliminate sources of infection.

Among smaller cities relatively few have any provision for hospital isolation and care of cases of communicable disease. A few still cling to their poorly equipped and rarely used "pest houses" for smallpox.

In few cities is there satisfactory coöperation between health and school officials in the control of communicable diseases. In some there is a definite antagonism, which seriously cripples efficiency.

Infant and Maternal Welfare Work.—Assuming a reasonably efficient health organization, work done by private organizations should be under the direction of the health department. It was founded that one city was appropriating several thousand dollars annually for the work of a private child welfare organization working independently. The health

administration knew little regarding its activities and had no control over them.

Milk and Food Inspection.—New York State some time ago adopted a system of dairy scoring in which increased credit is given to methods and less to equipment. This is particularly important at a time when production is low and prices high.

In most smaller cities dairies are inspected but once a year, and the scoring not effectively followed up to secure improvement in conditions. One full time inspector cannot properly supervise over 150 dairies.

Many cities have ordinances requiring protection of foods exposed for sale, but in few are they efficiently enforced.

Water Supply.—Fifteen points are added to the score if there are no auxilliary pipe lines (for temporary use) from sources open to pollution. Unprotected auxilliary supplies for fire purposes are frequently maintained, and their existence is usually a matter of common knowledge. In other instances, industrial plants maintain auxilliary pipe lines, connected with city supplies, guarded by more or less efficient systems of valves, and in more than one city no one except the city engineers and the management of the industrial plants knew of their existence. One comparatively recent typhoid fever outbreak was traced to the use of such an auxilliary line.

Disposal of Manure.—Many cities have regulations covering removal of stable manure. Most of them have overlooked the real object: the prevention of fly breeding, and the regulations are ineffective in so far as this is concerned.

Record Keeping.—Few cities have an adequate and sufficiently organized clerical force. This is especially true of the smaller cities, in many of which the health officer is obliged to do his own clerical work.

In the larger cities there is serious need of a uniform system of records.

Rarely, even in the larger cities, are spot maps or other graphic methods used to show distribution or prevalence of cases of communicable diseases.

Public Health Education.—There is a general lack of appreciation of the importance of educational work. Many health officers do not appreciate the importance of the newspaper as a medium for public health propaganda. Where newspaper publishers are willing and anxious to coöperate, and would make use of material sent to them regularly, these health officers fail to grasp the opportunity.

Appropriation.—Cities were visited in which it was practically impossible to determine what had been spent for public health work. Generally speaking the health administrations were doing the best work and receiving most nearly adequate support where good budgets are prepared annually. A committee of the New York State Conference of Mayors is now working upon a uniform budget system for second class cities.*

Most of the foregoing comments are in the nature of constructive criticisms, nevertheless, many cities are doing excellent work along various lines. As already noted health officers and other officials have welcomed the opportunity for discussion, have shown a keen interest in the score, and a desire to overcome defects to which attention has been called. In several instances concrete and important results have already accrued. It is the writer's hope to be able to arrange to have this initial scoring followed by periodical visits by an inspector to each city. So satisfactory has been the result that we are considering the feasibility of preparing a similar score adapted to towns and villages.

* Completed and published since date of writing

WHY COUNTY HEALTH OFFICERS SHOULD BE APPOINTED.

PETER H. BRYCE, M. A., M. D.,

Chief Medical Officer, Department of Immigration and Colonization, Canada.

IN the very concise presentation of the "The future of the American Public Health Association" by our president, Dr. Frankel in the February JOURNAL there is a paragraph indicating that very soon we may see the Association sending field secretaries at the request of local health officers to visit their communities to assist in any health campaign under contemplation.

Very many things doubtless may be said and done to assist in such work; but there is nothing seemingly so much needed as some well-determined unit upon which to base public health work in each State. As pointed out in the tables attached to Dr. Frankel's paper the variation in the amount of time devoted to public health work and in the salaries paid to officials in cities of 75,000 population and over, indicates the need of further education of the public even in the larger cities; but the facts given in the monthly Bulletin of Dr. Hurty showing health conditions in rural schools in Indiana, based upon the results of a survey of one county, illustrate the actual conditions which are to be met with in every State and Province in North America and which demand the most carefully considered measures for grappling with the situation.

In the May number, 1910, of the JOURNAL of the Association will be found a paper which presents the main arguments in favor of county officers of health; while such examples as those above quoted bring us back today once more to our unsolved problem. Whatever value the splendid work of individual workers and missionaries in Public Health may have had, we today recognize that effectiveness can only be gained through organization. Obviously efficient organization demands that all the time and energies of an individual or a number of them be devoted to their task and it is further plain that adequate financial remuneration be given for the work done for the public. Today, everywhere, there is being voiced discontent at the way in which the public school teachers of America have been and are being paid, and when it becomes further generally recognized how public health work has been played with in the past—a year's work in a rural municipality often paid for at the rate of $25.00 to $100.00 per year,—the united voices of the more intelligent communities must soon demand that the potential man-power represented in the children of the community be protected and nurtured in some measure in keeping with its real practical value.

Dr. Frankel points out that the South Atlantic States stand first in the average rate of salary and in the number of all-time health officers; but the table does not give the population of the places reported upon in comparison with the total population of a state. The old distinction in the municipal organization of New England and Old Canada of many townships, villages and towns as compared with county areas in the South and West explains in some degree these differences in the salaries, and points directly to the way in which public health organization requires to be worked out for obtaining effective results.

Some ten years ago Massachusetts, the home of the "town meetin'," passed an act to provide for the establishment of

county health districts and the appointment of inspectors of health for each. Further legislation has been passed providing that in every area with 10,000 population a tuberculosis dispensary must be supplied. Indeed the passing of legislation for the organization of health districts large enough to utilize the all-time services of a qualified medical officer of health is the immediate means of coping with present public health needs.

While the population, area, and assessment must in some measure determine the extent of a health district, yet settlement everywhere in the United States and Canada is now well advanced and working areas for educational and legislative purposes have been generally worked out. Such would naturally be a county area over which presides an all-time inspector of public schools and such area may for the time be accepted as a convenient health unit. Especially is such organization demanded at present when the United States Public Health Service is coöperating so generally with the States in the expenditure of public health grants. This coördinated work demands some method whereby rural public health can be definitely developed. When Congress voted $4,000,000 for venereal disease work last year and when the Public Health Service is asking now for $26,000,000 for tuberculosis hospitals especially to care for soldiers, when the Lever bill is demanding that $1,500,000 be spent on rural sanitation in the United States, and further when an education appropriation, requiring ultimately many millions for the physical culture of school children, is being asked for it is apparent that some idea of the magnitude of the work to be done and of the expenditures required is being had both by the people and their legislators.

It is probable that a population of 25,000 to 30,000 will be found the most practical minimum area to be placed under the control of such an officer, who should have the qualification of D. P. H.; while his headquarters would naturally be at the county sanatorium or dispensary where would be his laboratory and the home centre of the health nurses of his district. From this centre by phone and motor his energies would reach speedily the borders of the district; while his laboratory should serve for the diagnosis not only of tuberculosis, diphtheria, syphilis and other communicable diseases, but also for diseased tissues which the medical men of the district would wish investigated. Indeed such work would become the centre for all the organized health activities affecting the vital and productive welfare of any district.

The medical officer of health, by virtue of his intimate acquaintance with each school community and industrial centre, would become in a special sense the advisor and director of his community, and if there were associated with him as a board of health, the county judge and the chairman of the county municipality there would thus be brought together such a combination of legal, medical and financial experience that the community would recognise they had a solid basis upon which to build the most progressive and yet conservative plans for the reconstruction socially and from the public health standpoint of a standard community of the 'New Future.' If to such medical officers be further added the functions of the State Examiner in legal cases, much of the discredit attaching to the old coroner system would be removed and justice as well as health would be strengthened by the statewide appointment of such officers.

SCHOOL HYGIENE A NATIONAL PROBLEM.

JAMES A. NYDEGGER, M. D.,
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Read before General Sessions, American Public Health Association, at Chicago, Ill., December 10, 1918.

"Rural schools are neglected and insanitary," is the motif of this essay. There are four times as many mental defecitves as in the city, while half the children have enlarged tonsils, etc. This author calls for reform here if as a nation we are to hold our place in the world.

UNTIL recently the greatest problem confronting us was to win the war. This having been accomplished, the settling of other big problems will necessarily follow.

Of the many problems that will require our attention, one will be the reorganization of our military forces on a peace basis, with probably the introduction of universal military training. The revelations made by the medical examining boards, since we entered the war, with reference to the number of physical defects found in our young men of military age, has been astonishing. Even those of us who have paid some attention to the physical condition of our young Americans, the large percentage of those found "unfit" has greatly exceeded our expectations.

This war has opened the nation's eyes to numerous defects in our system, but to none more amazing than the physical unfitness of our young manhood for military service. England woke up to this self-same calamity, that threatened the life of the nation at the time of the Boer War, and as soon as the war was over she proceeded to introduce in her schools a well devised system of medical inspection, physical training, and mild military exercises to correct, as far as possible, the physical defectives. Other European nations discovered this grave defect in their systems at an earlier date, and proceeded to set the medical inspection and athletic system of training in their schools to promote a better physical condition of their children.

The study of conditions revealed by the physical examinations in connection with the draft, has forced some to hold that serious racial degeneration must occur in the United States unless the whole country acts quickly and vigorously to build up the physique and take better care of the health of American children in youth.

In these examinations, it was found that 77.3 per cent of 278,537 applicants for enlistment during part of the period from 1914 to 1917, were rejected because of physical defects. According to the report of the Surgeon-General of the Navy for 1916, out of 106,392 applicants for admission to the Navy, all under 30 years, over 74,000 or 70 per cent were rejected as being physically unfit. Seventy per cent of the applicants for the Army in the year 1916 were rejected for like reasons. Sixty-six per cent of the 1,300,000 volunteers for the Army and Navy since the war began were rejected for the same reasons. It is claimed that 60 per cent of unfitness between 31 and 45 years, would be a conservative estimate if reasonable standards are maintained. Now, evidently something is wrong with the physical condition of our young men, the ten millions or so between the former draft age 21 to 30, upon whom we chiefly

depended for victory, in this war, since the examining physicians rejected one third of those examined in this class, because they found them unfit for military service. One third, which indicates that over 3,300,000 Americans in the prime of their young manhood were not found qualified to stand up against the enemies' soldiers in the struggle for world freedom. It is also claimed that at least 5,000,000 of our young men between 21 and 31 years are physically unfit for military service. A recruiting officer reported from a single station, that only 316 out of 11,012 men examined were found to be up to the required standard. The failure of 7 out of every 10 young Americans to measure up to the physical requirements for entrance into the Army and Navy emphasizes the fact that the nation should be awakened to the necessity of strengthening the health and physique of American school children and youths.

The close relation in which the public schools stand to national health, is all the more emphasized, when we realize that according to the last census there were 10,529,871 pupils in attendance at rural and city schools. Of these there were 794,000 more pupils from 6 to 9 years of age, and 376,000 more from 10 to 14 years of age in rural school attendance, than in the city schools, with no mention made of the number of pupils in attendance at rural schools from 16 to 18 years of age, in excess of those of the same ages in city schools. On this basis, it is estimated that from 65 per cent to 70 per cent of the school population today belongs to the rural schools. It is for this reason the country district schools are spoken of as the bulwark of the nation, and not that the country youth is stronger and healthier, or possessed of better physique than his city cousin as statistics will show.

To convince people that the city is more healthy than the country, which has been so long exploited, is no easy task, but we do know that the death-rate is falling more rapidly in the cities than in the country. On what ground are we able to explain this change? Simply on the ground of sanitation. In a word, while extensive provisions have been made for improving health conditions in cities, the country districts have been neglected almost to the present time. No more striking example of this neglect can be shown than to compare the average rural school with the city school of today. In cities the school buildings are as a rule well planned, and constructed and equipped and administered in accordance with approved measures; the children are largely subjected to medical inspection; they are provided with the attention of specialists; have gymnasiums; and physical training is undertaken, but how about the neglected rural schools? Certainly the children in the country districts are entitled to just as well lighted and heated buildings, to just as habitable modern and sanitary schools, to just as pure water, to just as good medical attention, and deserve as much health and happiness as the children in the city schools.

Time will not permit to contrast the unhygienic rural school with the excellent condition of the city school, but the neglected and insanitary condition of the country school is only too well known to many of us. Some of the unfortunate features of such schoolhouses are these: an unsuitable location at an extreme of the district, with unhygienic surroundings, shaded by trees, perhaps, damp and deprived of proper light. The school yard may be too small for proper exercise of the pupils, or perhaps with grades too steep for service. The outhouse, if present, may be insanitary, an abomination if not a danger. The water supply, from a shallow well or a near-by or perhaps distant spring, is unguarded against

pollution. The building itself is unclean, insanitary, dark, improperly heated, poorly ventilated, its equipment antique and unsuited to its uses, the outcome being deformity or permanent injury to the scholars. Here one may find the common drinking cup, the common towel, the common wash basin, and worst of all, at times teachers, who do not realize the harm of continuing their use.

While a part, and not all of the sanitary defects of the average rural school have been cited, I will add that these conditions, as they exist in the country schools today, have not been overdrawn.

Knowing these conditions to exist, it is then a matter of no wonder, that the country school child, who spends from 6 to 7 hours a day, from 8 to 11 years, during the most impressionable period of his life, in a school as has been described, is not blessed with as good health as the city bred child.

The recent medical examinations conducted by the Public Health Service and other agencies, of a large number of rural school children in many states have given us valuable data in this respect. The statistics collected by these surveys show that an amazing percentage of the children in the rural districts are defective and in the need of medical attention, and further show that the health of the country school child is from 5 to 20 per cent more defective than the city school child.

When we consider the existence of diseases in country and city children we find, notwithstanding all the advantages of fresh air and of out-door life, that 3.7 per cent of the total number of country children have tuberculosis of the lungs while the city children with lung trouble make up only a fraction of 1 per cent. Again we find that malnutrition, which is usually held to be more prevalent among city children, and afflicts the large number of 23 per cent of them, really exists in the country school children to the alarming extent of one-third of their total number. When we come to mental defectives we find an average of 8 per cent of the country children are afflicted, while only 2 per cent of city children are afflicted. Heart diseases are found more than twice as prevalent in country school children than in those of cities. Curvature of spine, due in great part to the use of faulty seats in rural schools, is 20 times more prevalent in country school children than city children. Ear troubles in country school children exceed by five times those occurring in city school children. City school children found to be suffering from defects of the eyes number 5 per cent while in the country school children 20 per cent are afflicted with these defects. Enlarged tonsils, which greatly affect the development, and physical fitness of the growing children, exist to the amazing extent of one-fifth of the country school children, while but one-twentieth of city school children are found to be afflicted. In some rural districts even 50 per cent of the children have been found to be suffering from enlarged tonsils. Adenoids, mostly associated with enlarged tonsils, exist in city children to the extent of 8 or 9 per cent, while in country children their occurrence is almost three times as great. From 20 to 25 per cent of country school children suffer from caries of teeth, markedly affecting the general health, while city school children number but 1 or 2 per cent. A number of acute diseases as malaria, hookworm, and trachoma, while found in city school children, occur much more frequently in rural school children.

In some of our rural districts 45 per cent of the school children have been found afflicted with trachoma, while hookworm and other intestinal parasites were found to afflict from 80 to 90 per cent of the children of some Southern rural schools.

The above figures merely illustrate some of the insanitary conditions and health handicaps under which the country child has to grow up, and these could be greatly extended if space permitted.

When we enumerate the customary health disadvantages of country life, compared to city life, one is inclined to wonder not that the average country child is less healthy, but that his condition is not worse than it is. He has the great benefit of pure air and the out-door life, but he is apt to live in houses which are draughty and unheated, to walk long distances in extreme heat, cold, or wet, and to sit in school with damp clothes and wet feet. His people are also less inclined to seek aid from physicians, dentists, and oculists, because they have not been educated to do so except in extreme cases.

A short period elapses from the time the country boy finishes school, at from 15 to 18 years, until he reaches the age for military service. All too short a time in which to develop so many of the defects in his physical make-up, for which he is rejected. Many of the defects developed in him before and during school age remain with him when he reaches the military age. In fact, we find the defective conditions which are the more prevalent in school age are the chief ones for which he is debarred from military service. It has been noted by observers, in other countries, in case of volunteers for military service, that rejections because of physical unfitness were in direct proportion to the number of years spent at school. Although it is not claimed that these observations hold true for all sections of the country, they do serve to draw attention to the fact that large numbers of individuals in the country have not obtained the highest individual efficiency, and that the schools are responsible in a great measure, for such lack of development. This is all the more evident when it is recalled that the greatest number of rejections for enlistment are on account of poor physical development, defective vision, and hearing, heart disease, defective teeth, underweight and underheight and postural defects. These defects are in a large measure preventable, or at least controllable, depending upon their prompt recognition in childhood, the period in which so many of them have their origin.

National welfare depends upon the health of the people. The future welfare of our country depends upon no factor more vital than the health of our rural life. Our finest crop is our children. The rural school is the strategic point from which rural life can be improved. The state should see to it that the rural school is used to the limit of its possibilities as a means of improving the health of rural school children. All studies of rural school conditions have revealed a special need of health supervision of rural school children: (1) because they constitute nearly 70 per cent of the total school enrollment of the country; (2) they are largely denied the medical attention of specialists, such as may be had in hospitals and clinics in cities; (3) they cannot be protected in mass by health laws as is the case in urban communities; and (4) they are more readily affected by epidemic diseases which diminish vital resistance and exercise an injurious influence on physical and mental development.

To obtain the very best results in improving the physique of our children when and where should we begin? We must begin at the beginning of life itself. We must teach our children and youths, and as far as possible our adult population, how to live right, how to keep the body and its organs healthy. We must teach sanitation in the homes and in the schools, personal hygiene, and the need of observing the common laws of health. The safety of the state and nation demands

that we actually stimulate them to apply this knowledge. At the same time we must fully realize that the introduction of any single innovation or procedure is not going to correct all of the physical defects existing in our young people. The process of raising the health standard of the nation must be a gradual one, beginning primarily with efficient universal medical inspection in our public schools, from the entrance age of six years onward, with the teaching of more and more thorough personal hygiene, the introduction of modern, hygienic and sanitary measures in the construction, equipment and administration of schools, coupled with a well devised system of compulsory physical training as a part of the curriculum, for the school children.

This, it seems to me, is in part a great national problem, and the Federal government should handle it as is done in the European countries. The government should coöperate with the states in seeing that the physical and mental defects in our school children are corrected, with the view of remedying the existing mediæval conditions in our rural schools today.

With the introduction of such a system in our schools, we should not lose sight of the fact that the proposed health guardianship to be productive of the highest good, should give close attention to parental, prenatal, and infant care up to school days, with closely coöperative home, school, state and Federal care up to the age of graduation.

In a paper presented at the Fourth International Congress on School Hygiene held in Buffalo, five years ago, the writer strongly urged the coöperation of the Federal government with state health and educational officials in establishing in rural districts, medical inspection of school children, model schoolhouses, with model equipment, and toilet rooms, with playgrounds and athletic fields adapted to the needs of the several communities, these to serve as standard types for other communities. Is there anything in our national life more important than improved school hygiene at this time? Is there anything that has been more lamentably neglected? Is there any better way of preparing our boys and girls for the stern civic and military duties that are before them than to give them sound bodies?

It is being urged as the sacred duty of every American doctor, in this critical period of the nation's life, to keep himself in fine physical condition. To fail in this is to fail in "patriotism." We must set the standard of physical fitness.

If the United States is to maintain its place among the nations of the world, its children must not only be endowed with strong, healthy bodies, but during the growing period their bodies must be supervised and trained so as to escape the diseases and deformities which are all too common among our people. In other words, our educational system must include as well as mental training, an efficient medical inspection, and a rational physical training which shall go beyond a few exercises indifferently done, and any medical supervision yet undertaken.

It seems almost superfluous to add, in connection with what has been said, that the field of school hygiene offers to this Association at this time unusual opportunities for valuable and lasting work; in fact a responsibility rests upon it in educating the public to see the necessity of reforms in school sanitation, and I believe it would be a wise plan to form a section on school hygiene at this meeting.

SIR ARTHUR NEWSHOLME OUTLINES RED CROSS POLICY.

SPEAKING at the Red Cross headquarters in Washington on May 2, Sir Arthur Newsholme endorsed the public health program undertaken jointly in this country by the American Red Cross and the United States Public Health Service. Sir Arthur, who until recently was chief medical officer of the English Government local board, is one of England's foremost health specialists. He was in the group of distinguished men assembled at Cannes by the five great world powers, to advise the committee of Red Cross societies in shaping the program that is to be presented before the congress of the Red Cross at Geneva. This is to be held in the Swiss city thirty days after peace shall have been declared.

With reference to the world-wide policy of the Red Cross, Sir Arthur spoke in part as follows:

It was a happy inspiration of Mr. Davison, the president of the American Red Cross, which led to his calling together the international conference of Red Cross societies at Cannes, with a view to considering means by which the worldwide activities of Red Cross workers might be utilized for the prevention of illness as well as for the treatment of sick and wounded mankind. It is a vision of the future, which, I think, will have a great influence on the welfare of mankind, if, as I am confident will be the case, the conception fires the souls of the multitude of Red Cross workers and contributors in every civilized country, and leads them to decide not to demobilize their forces, but to continue their beneficent activities against the horrors of peace, which, in the aggregate, are even more serious to mankind than those of war.

The statement that the devastation produced by disease in times of peace is even greater than the loss of life from war, may be illustrated by the experience of England and Wales. In the four years., 1911–14, immediately preceding the World War, 2,036,466 persons died in England and Wales, while, according to official figures, the total loss of men, during the four and one-fourth years of war, was 835,743, including 161,800 presumed dead. The war figures the entire loss for the British Empire; but it cannot be far from the truth to state that war on the gigantic scale of the war from which we have just emerged has killed in Great Britain about one-third as many as have died in the civilian population in a corresponding period. I do not lose sight of the fact that a large proportion of the civilian deaths occur in ripe old age, and that 28 per cent of the total civilian deaths occur among children under five, while those destroyed by war are adults and the most virile of our race. But the greater part of the deaths in childhood, as well as in adult life, before old age is reached, are preventable; and in the future will be prevented, given adequate research, intelligent and unsparing application of knowledge already in our possession, and an avoidance of the public parsimony which, in relation to public health, constitutes the most serious form of extravagance. That is the ideal which Mr. Davison and his collaborators place before us; and it was to devise plans to this end to enlist the continued coöperation of all Red Cross workers that the conference was called at Cannes.

The conference held a number of general meetings in which the general policy to be pursued was discussed, and then divided itself into sections dealing with the following subjects: preventive medicine, child welfare, tuberculosis, malaria, venereal diseases, nursing, information and statistics.

The proposed organization of Red Cross agencies for preventive work has already received an imprimatur in the league of peace draft; and it would be appropriate that its headquarters should be near if not side by side with the future home of that league. If it receives the full development for which we hope it will form, perhaps, a chief instrument in securing peace and continued happiness for mankind.

The relation of the central bureau to National Red Cross societies will be one of mutual coöperation. The central bureau will provide information and facilities for national work; the actual work will need to be carried out in each country nationally and in the main from funds supplied by that country.

It is not intended that the National Red Cross shall undertake, much less compete with, work already being carried out either by local authorities or by existing voluntary groups. If, for instance, there is a society concerning itself with child-welfare, or the prevention of tuberculosis, or of venereal diseases, the National Red Cross would naturally give such assistance as it could through its voluntary workers in this special work, while leaving untouched existing arrangements. If no such societies existed the National Red Cross might advantageously assist in their formation, retiring as soon as the separate organization was working.

In countries in which official and existent voluntary agencies scarcely exist, more active work of the Red Cross organization will be called for; in such countries assistance may be needed from the Central international bureau,

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A MAY DAY CELEBRATION.

A May Day celebration, very different from those proceedings in which the red flag is the symbol, and different again from those that center about the English Queen of the May, was that of Danville, Va., a pageant and parade in the interests of better health. This is a happy combination of the fashionable pageant and the less fashionable public health instruction. It is a combination which harnesses the love of the dramatic, inherent in every one's heart, to the plow of public service.

Danville is not a great city, but it was able to attract four thousand, according to local statisticians, to take part in the exercises, while other thousands of citizens realized that something connected with public health was the reason for the festivities. To many it was undoubtedly the first time that the thought of public health had entered their minds. The procession brought together school children, white and negro, and grown-ups of all classes, and there were bright banners, mottoes presenting health principles, and floats, all of them factors to rivet the attention of the people and impress on them the fundamental truths of sanitation.

This Virginia city seems to have been fortunate in its program. It was one that called for the aid and attention of all kinds of citizens. There was a fairy play in the interests of baby betterment; there were serious addresses by health authorities; there was the presentation of prizes to school children for health essays, and the whole occasion was molded into a patriotic one by communal singing of the national anthems. Every civic factor was focussed on civic betterment, and these factors, board of trade, public schools, city departments, women's clubs, and the like, were active ones in the city's public and social life.

Such an occasion cannot fail to be a firm foundation for the coördination and coöperation of all civic forces to the communal good, and while this one was specifically directed

towards health, it must prove of greatest value in the other functions which a municipality must exercise. The health pageant, fitted as it is to the psychology of our people, can hardly fail to be a valuable tool in the hands of health administrators, if they realize its possibilities.

OHIO AND THE HUGHES BILL.

The second of two steps necessary to place Ohio in the forefront in state public health organization has just been taken in the Buckeye commonwealth. The passage of the Hughes health district act insures an adequate health department, administered by a full-time health commissioner, for every community in the state.

The progress, of which this law marks the second stage, began two years ago, when legislation was adopted to reorganize the state health department. By that act the old State Board of Health was abolished and a State Department of Health, headed by a single commissioner with an advisory Public Health Council, was established in its place. The internal organization of the department, built up to a condition of strength through a long period of years, was left unchanged in this reorganization. The operation of the new department began July 1, 1917, and Dr. Allen W. Freeman, formerly of the United States Public Health Service, assumed charge as state commissioner of health in October, 1917. With the exception of a few months in military service last year, Doctor Freeman has continued to administer the affairs of the department since that time.

The reorganization of the state health administration left, however, a weak point in Ohio's public health machinery—the highly inefficient condition of the local health system throughout the state. Under the plan which has prevailed in Ohio for years, each municipality and each township has constituted a separate health district, with its own administration. More than 2,100 independent health jurisdictions have thus existed in the state, subject to but slight control by state authority and almost wholly lacking in trained or even reasonably competent personnel. Many health officers have served for salaries of four or ten dollars a year, and the average remuneration in the townships is estimated to have been about twenty-five dollars a year. The part-time official has been universal, except in five of the cities—Cleveland, Cincinnati, Akron, Dayton and Springfield. The whole situation may be summed up by saying that Ohio's rural population—one-half of the total population of the state—has been without real public health protection, while the protection afforded in all but a few of the cities has been very slight.

A system of local health districts, each comprising a city of more than 25,000 population or a county area outside such cities, is set up by the new law. Each district is required to employ a full-time health commissioner, with at least one nurse and one clerk. A state subsidy up to a maximum of $2,000 per annum is provided for each district. Duties of the district health officials are defined in such a way that when the system is in full operation a comprehensive program of public health betterment will be in progress in every section of the state. The State Department of Health is given strong supervisory authority over local health officials, although in purely local matters these officials are given thorough independence. A staff of eight district supervisors, with the state divided among them, will be maintained by the State Department of Health if pending appropriations are passed. Each health district, in addition to the

health commissioner will have a five-member board of health, of which the commissioner, will be the administrative and executive agent. Firm financial support for the new machinery is assured by the fact that public health expenditures are made a second lien on the revenues of the townships and municipalities included in the district, following immediately after public debt charges in this regard.

Public health officials who have studied the Ohio health plan have been unanimous in its praise. In addition the legislation while pending had strong support from organizations representing labor, industry, agriculture, the medical profession, women's clubs and other influential groups.

Ohio's experience during the next few years will be watched with interest by the entire country, for nowhere have the theories which have come to be accepted as the basic principles of public health work received a more thorough testing out than they are to get in Ohio.

VINTON E. MCVICKER.

NATIONAL EPIDEMIC DETECTOR.

Among recent plans for the betterment of the public health, there is hardly one which bears promise of greater value than that to be established by the United States Public Health Service for the detection of epidemics. This will require a government officer in each state to watch morbidity conditions and report them to Washington. It is an application to interstate health administration of the principle of the endemic index, which Massachusetts has been a pioneer state to develop. Such an index within a state relegates the great labor of recording of notifications to a clerical force. When, under the impulse of an incipient epidemic, the number equals the normal maximum of non-epidemic conditions, the fact becomes evident to the clerks, who notify the experts. By means of clock-faces, which have been figured in the JOURNAL, the indication of conditions demanding expert attention becomes practically automatic; in fact, could be made truly automatic, if it were deemed worth while.

The principles underlying the value of the index are plain and simple. It is the duty of the health officer to watch over the health of his people, and one of the foundation stones for his work is to have a knowledge of the health conditions and the variation in them, in his district. Until recently the health department has been obliged to work much like a fire department—wait until something happens that attracts public attention, and then, to the best of its ability, try to quell the outbreak. This has been the usual way of coping with epidemics—to rush to the scene as soon as possible after they are started, and by emergency methods put them down.

Little by little, preventive methods have been gaining ground, and morbidity reports have been more and more the guideposts to betterment in public health. Their value has consisted in giving notice of conditions in communicable disease that need attention. The possibilities that they present have been made the greater by a better understanding of normal conditions of disease in the community.

A few states have developed their systems of vital statistics and notification to a point where an endemic index is possible, and, once established, it may be the prophet of epidemic conditions before a real epidemic has developed. These results have proved the practicability of the use of morbidity figures, and the successes in different states underlie the broader work that is to be undertaken by the United States Public Health Society.

As far as the plan has been developed, there will be epidemiologists in fifteen of the states, who will take charge of interstate statistics of infectious disease. They will furnish to the service in Washington each week a morbidity statement. They will be able to establish endemic indexes for all the states and with this knowledge will be able to make a synchronous attack on epidemics. It needs no argument to demonstrate the value and practicability of this plan. It sets aside all local elements of uncertainty or delay, and by a great coördinated movement assembles the important truths where they may be studied, not in isolated groups, but as a related and consistent whole.

Aside from its immediate bearing on epidemics, the movement has potentialities for the awakening of those states of the Union which may be termed perhaps as "statistically asleep," while another influence that must have force lies in the possibilities of unifying the very discordant methods current in different localities for approaching the same health problem.

WHAT DISEASES SHOULD BE REPORTED.

Many health officers and even some physicians sometimes wonder what is the utility of reporting certain types of diseases. For example, in the case of measles one might say: "It is admitted that, in spite of every preventive measure at our disposal, the spread of measles will continue. What's the use of putting thousands of doctors and health officers to the trouble of reporting this disease?"

Granting that the spread of measles cannot be controlled—and even this is disputed by a few—reporting is nevertheless worth while, for this gives the opportunity of educating the family so that measures will be taken to prevent the development of pneumonia.

A clear understanding of the various reasons for reporting is so important to the health officer that perhaps the repetition of them here may be pardoned:

1. To prevent the spread of the disease by means of quarantine or isolation. This is the most important motive and applies in the case of most of the reportable diseases.

2. To secure statistical data as a basis of study. This applies especially to diseases which are not as yet fully understood, such as influenza.

3. To induce the patient to take proper treatment. This applies in the case of pneumonia and syphilis.

4. To urge proper after-care. With poliomyelitis, for example, it is very important that proper muscle training should be pursued in order to restore the use of muscles. The guarding against after-effects of measles has already been referred to.

5. To guard against confusion owing to mistaken diagnosis. For example, many health officers think that every case of chicken-pox should be investigated in order to differentiate it from smallpox. Similarly, German measles and scarlet fever are frequently confused.

Dr. C. V. Chapin of Providence properly points out, however, that reporting is not an end in itself. Where a health department is not prepared to make use of reports, it is not sensible nor fair to thus take the time of the physician. The ability to use reports should precede the demand for reporting.

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In Memoriam.

Henry Mitchell.

By the death of Dr. Henry Mitchell, which occurred January 30, at Daytona, Fla., the medical profession of this country sustained a great loss. His home state, New Jersey, and the American Public Health Association in particular, must feel this loss most keenly; in the former he was a foremost health administrator, in the latter an interested member, an energetic worker, a good advisor and one who had been elected to the highest office within its gift.

Henry Mitchell was born in Norwich, N. Y., August 6, 1845. He was educated at the Catskill Academy and Phillips Exeter Academy. He was graduated at Bellevue Hospital Medical College, New York City, in 1866 and at once began practice in his home town. Two years later he entered the service of his country as surgeon in the 103d regiment, New York Volunteers, and at the conclusion of the war established himself in New Jersey, with the public health administration of which he kept in touch till his death. He was first in Jersey City, 1868, and eleven years later removed to Asbury Park, his home for the remainder of his life.

Engaged in active practice, he early recognized the necessity, especially in a resort to which thousands came each summer, of establishing an efficient board of health, and it is undoubtedly due largely to his efforts in this direction that Asbury Park owes its excellent reputation. His board, for he was made president of it, was progressive, and he himself became and remained the executive force in civic progress along all lines.

In 1894 he was named secretary of the New Jersey State Board of Health, in which capacity he served for fourteen years. Under his supervision the board made rapid progress. Through his efforts a bacteriological laboratory, the first state laboratory in the country, it is claimed, was established. At the twenty-eighth annual meeting of the American Public Health Association, held in Ottawa, Canada, in September, 1898, Dr. Mitchell was elected vice-president and in the following February, on account of the death of the president, Dr. George H. Rohé, he became president, delivering an address before the Association at its succeeding meeting at Minneapolis.

Some of the suggestions made by Dr. Mitchell on this occasion as being within the province of the state health governments, are of interest twenty years later, since they show how progressive he was in his ideas. He included in the necessary duties of central sanitary organization in each of the states,—vital statistics, sanitary supervision over public transportation service, investigation of local outbreaks of disease, investigation of sanitary condition of schoolhouses, investigations into sources of sickness and mortality, prevention of the spread of contagion among animals, prevention of the sale of contaminated milk, receiving and recording reports of communicable diseases, supervision over a state bacteriological laboratory and the detection of the practice of adulterating foods. One who can remember the condition of health administration a score of years ago will realize how far-reaching were these ideas, some of which have not yet been realized by all the states of the Union.

Honors began then to flow in upon Dr. Mitchell. He was made president of the New Jersey Sanitary Association, then in 1903 was elected president of the New Jersey Society of Medicine, remaining a fellow and a trustee thereafter, and in addition was president of the Hudson and Monmouth Counties Medical Board and

of the Chenango (N. Y.) County Medical Society.

Dr. Mitchell made Florida his winter home while still a young man and he returned to it for a certain period every year. The nervous condition due to worry over his son's illness which had a fatal termination was an important factor in his own taking off.

The editor of the *Medical Journal of New Jersey* reviews his noble character in these words: "A true Christian gentleman, an able practitioner, an expert sanitarian and a warm personal friend, who was well summed up in the five words—simplicity, sincerity, sweetness, strength and service."

CHARLES V. CRASTER, M. D., D. P. H.

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DANIEL LEWIS.

The daily newspapers record the death on March 22, at Alfred, N. Y., of Dr. Daniel Lewis. Born in Alfred in 1846, Dr. Lewis was a graduate of the local university in 1869 and received his M. D. from the College of Physicians and Surgeons, New York City, in 1871. His practice was built up in the metropolis which was his home for nearly fifty years. His public service began in 1895 when Governor Morton appointed him commissioner of the New York State Board of Health. He was at once elected president of the Board, and on its reorganization in 1900 he was appointed by Governor Roosevelt as the first commissioner of health under the new dispensation. In the field of publication, he was the founder and its editor for many years of the *Medical Review of Reviews*, and from his pen came many important contributions to medical literature. For a relief from this active life in medical fields he busied himself much with the affairs of Alfred University, was the president, during a number of years at intervals of its alumni association, and was the founder of the University Library, serving on the board of trustees for some thirty-five years. His service in public health was state-wide and national, while in his relationships to his *alma mater* "his wise counsel, his boundless optimism and his enthusiastic devotion, made of him an alumnus, friend and trustee, whose valuable aid is written large through a period of nearly half a century."

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PROGRAM OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

In the course of the efforts towards getting new members the good works of the Association have been reviewed by the secretary's office and have been crystallized into these thirteen items:

1. Publication of a technical health magazine (THE AMERICAN JOURNAL OF PUBLIC HEALTH.)
2. Publication of a monthly NEWS LETTER.
3. Preparation of standard forms and standardized literature for health officers.
4. Organization of state and local health associations.
5. Conducting an employment bureau.
6. Procuring legislation providing for full time local and state health officers.
7. Procuring adequate appropriations for health work.
8. Conducting an information bureau on health matters for members and others.
9. Coördination of national and state associations engaged in health activities.
10. Development of a better *esprit de corps* among health workers.
11. Studies and investigations leading to reduction in death-rates.
12. Meetings and conferences at which all organizations interested in better health may be represented.
13. Campaign of popular health education to reach every citizen in the community.

ASSOCIATION NEWS

HELP EMPLOYMENT BUREAU.

In order to help relieve the shortage of sanitarians due to the war, free help-wanted announcements will be carried in this column until further notice. Copy goes to the printer on the fifteenth of each month. In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Health Officer in Virginia. Salary, $3,300. Excellent opportunity for right man. Address L. C. E., No. 210, care of this JOURNAL.

City Physician for health department in Michigan. Salary $2,400. Address H. N. No. 211, care of this JOURNAL.

In Virginia, laboratory technician, salary $100 per month. Address R. W. G., No. 214, care of this JOURNAL.

Graduate nurses with public health training, for county work, specializing in prenatal and infant hygiene. Address K. B. V., No. 224, care of this JOURNAL.

Health Officer in Wisconsin, city of 21,000 population, 91 miles from Chicago. Salary $2,500. Address J. A. J., No. 224, care of this JOURNAL.

Health officer for the Portsmouth and Norfolk County Health District, which has been under supervision of the U. S. P. H. S. for past sixteen months. Population, 125,000. Sufficient personnel of inspectors and assistants. Must be an M.D. with some experience in P.H. work. Salary $3,000 with transportation while on duty. Chances for an increase. References required. If possible must be ready to take charge July 1 or shortly thereafter. Apply, Health Director, Portsmouth and Norfolk County Health District, Portsmouth, Va. F. T. F. No. 230.

A State Board of Health is in need of a trained epidemiologist who can also do vital statistics work. Write qualifications and experience to L. E. N., No. 242, care of this JOURNAL.

Recent legislation in Ohio creates a demand for approximately 110 whole-time health officers with permanent tenure of office under civil service. Salaries range from $2,000 to $6,000 per annum. For further details write to Dr. A. W. Freeman, State Commissioner of Health, Columbus, Ohio.

Competent bacteriologist to take charge and run the Lewisburg Laboratories, Inc., on a commission basis. Good building and good equipment, fine location. Good opportunity for the right man. State age and experience, give references, state whether married or single. Address Stuart & Watts, Lewisburg, W. Va.

CAMPAIGN NEWS.

May proves to be like February, a short month for business operations, for Decoration Day followed by Saturday cuts down the effective time to twenty-nine days. This lessens the record of new members, but nevertheless the total tally is 3,200, at the time when it is necessary to close the forms of the JOURNAL.

Although not quite achieving the desired goal, the campaign has brought it plainly into sight and has shown how with a little more effort, it will yet be attained. The campaign has been a wonderful stimulant to American Public Health Association members and has spread the fame of the Association. In almost every locality the praises of the Association have been sung by interested members, and there are only seven states of the Union from which new members have not been accredited. Some members whose sponsors have not yet been stated, may reduce this number. Some states have doubled their previous number of members; have really secured the "Member per Member." The figures will be presented later when it has been possible to assemble them all, and will be illustrated by charts in a novel study of member distribution and efficiency rating.

Some members have been intensely interested in increasing the membership of the Association. In the *News Letter* half a dozen of them were noted, who had secured ten members or more each. Three of the six have not been satisfied with what they had already accomplished, and have increased their scores, so that these now read, Dr. J. A. Kappelman, M. D., of the Illinois State Department of Health, 24; A. T. McCormack of the Kentucky State Department of Health, 15, and Mayo Tolman of the West Virginia State Health Department, 13. To these three men the Association is indebted for fifty new members, while a good many others have secured more than was asked of them, and in a later JOURNAL will be credited with what they have accomplished.

LIST OF NEW MEMBERS

PROPOSED FOR ELECTION TO THE

A. P. H. A.

The applications for membership in the American Public Health Association filed between the issue of the JOURNAL for May and May 20, when the *News Letter* went to press, were so numerous, that three pages of the latter could not present them all. The names that were crowded out of the *News Letter* are here given together with the other applications received up to May 29.

Sponsors	—and—	The New Members Whom They Introduced
(States arranged in alphabetical order)		
ALVIN W. KLEIN, M. D., Riverdale, New York, N. Y.		ALBERT E. AUSTIN, A. M., M. D., Sound Beach, Conn. Greenwich Dept. of Health.
WILLIAM J. ORCHARD, S. B., New York, N. Y.		M. F. TIERNAN, New York, N. Y. Manufacturer.
		MARY C. HURLBUT, M. D., Rosebank, N. Y.
CARL E. McCOMBS, M. D., New York City.		IRVING DEWEY WILLIAMS, A. M., M. D., New York City. Supt. of Towns Hospital.
		HUGH F. LORIMER, M. D., Ordway, Colo. Member Colo. State Bd. of Health.
		GERTRUDE R. BRISTOL, B. S., Foxboro, Mass. Student of Public Health.
		ANNA L. ABERCROMBIE, M. D., Baltimore, Md. State Bd. of Labor and Statistics.
		FRED W. EDELMANN, M. D., Saginaw, Mich. City Physician.
JAMES ALEX. MILLER, M. D., New York City.		FREDERIC E. SONDER, M. D., New York City. Head of Laboratory.
C. E. TERRY, M. D., New York City.		ANDREW G. DuMEX, M. S., Ph. D., Washington, D. C. Associate in Pharmacology.
WATSON S. RANKIN, M. D., Raleigh, N. C.		GEORGE WINSTON BOTTS, M. D., D. D. S., Nashville, N. C. County Health Officer.
A. McR. CROUCH, M. D., Raleigh, N. C.		PRESTON BROOKS LOFTIN, M. D., Beaufort, N. C.
RICHARD H. LEWIS, M. D., Raleigh, N. C.		FLETCHER R. HARRIS, M. D., Henderson, N. C. Board of Health
ENRIQUE E. ECKER, Ph. D., Cleveland, Ohio.		H. L. ROCKWOOD, M. D., Cleveland, Ohio.
		L. F. HUFFMAN, M. D., Lakewood, Ohio. Acting Asst. Surg., U. S. P. H. S., Venereal Disease Dept.
		GEO. E. WEBSTER, M. D., Cleveland, Ohio. In charge of Narcotic Bureau.
W. R. MORRISON, A. M., M. D., Cincinnati, Ohio.		PROF. HARRIS M. BENEDICT, Cincinnati, Ohio Prof. of Botany, University of Cincinnati.
J. W. ELLMS, Lakewood, Ohio		ERNEST H. STRONG, Milwaukee, Wis. Bacteriologist.
GEO. D. MAKEPEACE, Cleveland, Ohio.		WILL J. KLEIN, M. D., Cleveland, Ohio.
MALCOLM D. MILLER, M. D., Akron, Ohio.		FRANK V. DUNDERMAN, M. D., Akron, Ohio. Akron Health Dept.
CHAS. T. NESBITT, M.D., Akron, Ohio.		A. B. PLOWMAN, Ph.D., Akron, Ohio. Prof. of Biology, Univ. of Akron, and Director Education, Akron Health Dept.
JOSEPH T. MARTIN, Oklahoma City, Okla.		ARTHUR R. LEWIS, M. D., Oklahoma City, Okla. State Health Commissioner.
		HARRY HOWARD CLOUDMAN, A. B., M. D., Oklahoma City, Okla. Medical Inspector of City Schools.
S. H. GILLILAND, M. D., Ambler, Penn.		W. L. DAY, Ambler, Penn. Biological Products.
RUTH WEST, M. S., Glenolden, Penn.		HERMAN BERNARD BACHERS, Glenolden, Penn. Bacteriologist, H. K. Mulford Co.
D. H. BERGEY, Philadelphia, Pa.		F. LIONEL MEREDITH, P. D., Hagerstown, Md. Organizing Private Health Laboratories.
SAM'L R. HAYTHORN, M. D., Pittsburgh, Pa.		JAMES CLARK BURT, Ph. B., M. D., Pittsburgh, Pa. Chief Genito-urinary Dispensary.
W. L. HOLMAN, M. D., Pittsburgh, Penn.		FREDERICK C. NARR, Pittsburgh, Pa. Passavant Hospital.
WILLIAM F. WELLS, M. D., Austin, Texas.		THEO. C. HILL, B. S., C. E., Erie, Penn. Civil Engineer.
W. A. BRUMFIELD, M. D., Richmond, Va.		FRANK G. LOUTHAN, Esq., Richmond, Va. Director Law Enforcement, State Bd. of Health.

AGNES RANDOLPH, Richmond, Va.

ENNINION G. WILLIAMS, M. D., Richmond, Va.

E. C. LEVY, M. D., Richmond, Va.

PROF. T. J. MURRAY, Pullman, Washington.

MAYO TOLMAN, Charleston, West Va.

M. B. WILLIAMS, M. D., Wheeling, West Va.

T. F. THOMSON, M. D., Milwaukee, Wis.

GUSTAVE WINDESHEIM, M. D., Kenosha, Wis.

CARL F. RAVER, M. D., Charleston, West Va.

MISS BLANCHE F. WEBB, R. N., Richmond, Va. Exec. Sec'y, Richmond Anti-Tuberculosis Assn.

WILLIAM W. BAKER, Hallsboro, Va. Tanner.

THOMAS J. STRAUCH, Richmond, Va. Chief Dairy Inspector, Health Dept.

WALTER A. BOWRY, Richmond, Va. Chief Sanitary Inspector, Health Dept.

Mrs. LEONA E. BRYANT, Pullman, Washington. Student.

MILTON W. BRANDT, B. D., Pullman, Washington. Asst. Bacteriologist, Experiment Sta.

EMMETT BRANDT, Pullman, Washington. Student.

R. W. LOVE, M. D., Moorefield, West Va. County Health Officer.

U. L. DEARMAN, M. D., Reedy, West Va. County Health Officer.

MARIA WARD LAMBIN, A. B., New York City. Community Councils of National Defense.

H. C. SKAGGS, M. D., West Va. County Health Officer.

WM. M. BABB, M. D., Keysey, West Va. County Health Officer.

W. H. PARKER, M. D., Lewisburg, West Va. County Health Officer.

W. C. KELLEY, M. D., Morgantown, West Va. Municipal Health Officer.

M. D. CURE, M. D., Weston, West Va. County Health Officer.

W. T. HIGHBERGER, Maysville, West Va. County Health Officer.

ALBERT E. NOLTE, M. D., Benwood, West Va. Health Officer.

GEO. E. ADAMS, Milwaukee, Wis. Deputy Registrar of Vital Statistics.

WILLIAM ELMER NELSON, M. D. C., Kenosha, Wis. Dairy and Food Inspector.

ABRAHAM S. WARDER, M. D., Grafton, West Va., Health Officer.

Names of Proposed Members whose Sponsors are not known

JOHN B. WEBB, M. D., Portsmouth, Va. U. S. Public Health Service.

F. F. FARNSWORTH, M. D., Charleston, West Va. P. A. Surg. U. S. P. H. S., State and Federal Director, Bureau of Venereal Disease.

CHARLES P. CALDWELL, M. D., Chicago, Ill.

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E. S. BOLTON, M. D., Brandon, Manitoba. Medical Health Officer.

L. A. HANSEN, Takoma Park, Washington, D. C. Medical Dept., Seventh-Day Adventists.

S. BOUCHER, M. D., D. P. H., Montreal Canada Director, Dept. of Health.

HAROLD H. FOX, M. D., Miami, Fla. State Pathologist and Director of Miami Lab'y.

GEORGE E. GOODRICH, M. D., Phoenix, Ariz. Surgeon, State Bd. of Health.

ANITA C. BLOCK, New York City. Associate Editor, "New York Call."

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ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, New York City. Attention of Lillia M. D. Trask, Librarian.

FRITZ ALBERT BRINK, M. D., Pensacola, Fla. Bacteriologist, State Bd. of Health.

CHAS. FRANKLIN CARTER, B. S., M. D., New Orleans, La. Director of Laboratories, U. S. Naval Hospital.

HELEN FLOYD DEANE, B. S., Fall River, Mass. Special Agent, Bureau of Labor Statistics.

ELIZABETH M. STURGIS, M. D., Brooklyn, N. Y. Industrial Medicine.

THOMAS D. WOOD, A. M., M. D., New York City. Professor.

E. G. HUGHES, M. D., Provo, Utah.

CATHERINE REGAN, Brooklyn, N. Y. Kingston Ave., Hospital.

G. A. WHEELER, M. D., Spartanburg, S. C. P. A. Surg., U. S. P. H. S.

OLEY A. BRITELL, B. S., M. D., Mineola, L. I., N. Y. Capt. M. C., Medical Research Laboratory, Hazlehurst Field.

DWIGHT E. BREED, Austin, Texas. Exec. Sec'y, Texas Public Health Assn.

HERBERT H. JUDD, M. D., Bozeman, Mont.

HIRAM M. READ, M. D., Seattle, Wash.

WM. N. BRALEY, A. B., M. D., Highland Park, Mich. Health Officer.

MOORE SONEAT, M. D., A. M., New Orleans, La. Board of Health.

SUPPLEMENTARY LIST

MAY 21–29, 1919.

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H. L. ABRAMSON, M. D., St. John, N. B. Chief of Laboratories, N. B. Depart. of Health

EUGENIO ALBO, M. D., Havana, Cuba. Hospital Physician

CHARLES M. BEALL, M. D., Washington, D. C. Medical Inspector

JOHN PAUL FREY, M. D., Washington, D. C. Chief, Bureau Preventable Diseases, D. C. Health Office

BOLIVAR J. LLOYD, M. D., Washington, D. C. Surgeon, U. S. P. H. Service, Hygienic Laboratory

WALTER W. R. MAY, New York City. Asst. Director, Division, Venereal Diseases, U. S. P. H. Service

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Meetings of Associations.

The JOURNAL will be glad to publish the dates of prospective conventions or meetings of associations whose purposes are allied to those of the American Public Health Association.

American Public Health Association, New Orleans, La., October 27-30, 1919. Take notice of the change of date.

Philadelphia Housing and Town Planning Association, Philadelphia, June 9–10.

American Water Works Association, Buffalo, N. Y., June 9–13.

Tri-State Water and Light Association of the Carolinas and Georgia, Greenwood, S. C., June 17–18.

Maine Medical Association, Portland, Me., June 18–19.

North Dakota Medical Association, Grand Forks, N. D., June 18–19.

Nevada Medical Association, Lake Tahoe, Nev., June 20–21.

Southwestern Waterworks Association, Kansas City, Mo., June 23–26.

New Jersey Medical Society, Spring Lake, N. J., June 24–25.

Health Officers of New York State, conference, Saratoga Springs, June 24–26.

New York State Sanitary Officers Association, Saratoga Springs, June 25.

Southern Minnesota Medical Association, Rochester, Minn., June 30–July 1.

Medical Health Officers of Nova Scotia, Antigonish, July 1.

Florida Public Health Association, August 10.

Texas Public Health Association, date not set.

Southwestern Tuberculosis Conference, Los Angeles, Cal., week of September 22.

Southern Tuberculosis Conference, New Orleans, week of September 29.

Quebec Public Health Association, September.

Iowa Public Health Association, September.

Illinois Public Health Association, October 7–9.

California Public Health Association, October, date not set.

Minnesota Public Health Association, October, date not set.

American Society for Municipal Improvements, New Orleans, La., November 12–14.

BOOKS AND REPORTS REVIEWED

Housing Problems in America. *Proceedings of the Seventh National Conference on Housing, Boston, November, 1918. New York: National Housing Association. Pp. 469.*

The appearance of this volume containing the proceedings of the Seventh National Conference on Housing held in Boston in November, 1918, tempts one to look back at the volume issued after the first conference in 1911. The period of time is short, but the contrast between the two volumes is marked and must be a source of pride to those whose names are identified in this country with housing reform.

At the first meeting garbage and rubbish, privy vaults and alleys, dirt and dilapidation received as much attention as city planning, law enforcement, small houses, and the tenants' responsibility. The emphasis was largely on housing as such. In the new volume the emphasis is rather on housing as a factor in securing not only the health of the people but also their efficiency and contentment, although it is true that even these results seem to be sought rather more in the interests of successful business than of human welfare as such.

In 1911 the standard of housing was to be determined by the assumed necessity of keeping rents down in ratio to the minimum wages of working men. In 1918 positive standards of safety, health, convenience and comfort, secured if necessary by governmental aid, are declared to be a necessary plank in the peace program of democracy.

In 1911 Mr. Lawrence Veiller stated that "the nation's housing problem" today is in great degree the problem of the alley, the problem of the vault and general uncleanliness." He closed his admirable address on "A Programme of Housing Reform" with the following statement: "The garden city movement is a most important one, but . . . it is unwise . . . to allow attention to be diverted from the fundamental and primary necessities of decent housing for the poorest elements of the community by the attractiveness of what must necessarily for many years to come be a development for the better paid members of the community." In 1918 Housing and Social Reconstruction, as shown through various garden city plans, is the keynote. This, together with the attitude of labor on housing, government housing projects, and problems of management leave little space for the slum, though Ralph Adams Cram, in an address on "Scrapping the Slum," shows that the evils of the past have not entirely disappeared.

The "Standards Recommended for Permanent Industrial Housing Developments," adopted by the Federal Bureau of Industrial Housing, mark a long step forward for this country, but there seems some reason to believe that Great Britain is likely to outstrip the United States in formulating a general program of housing reconstruction.

The new emphasis placed in this volume on the social significance of housing will be generally recognized as an important factor in the larger aspects of public health.

Marion Talbot, A. M., LL. D.,
University of Chicago.

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Bacteriology and Mycology of Foods. *Fred Wilbur Tanner, M. S., Ph. D., Associate in Bacteriology, University of Illinois. New York: John Wiley and Sons, Inc. Pp. 592. Price, $6.00.*

Most of the standard books on bacteriology deal mainly with medical bacteriology, although each attempts to cover the general principles and history of the subject also. In Dr. Tanner's book, we have one which is unusually complete in dealing with the general principles of bacteriology, yet one which does not consider medical bacteriology at all, except in so far as the bacteria in air, water, and food may affect health. On the other hand, the book omits the history of the subject. It is important for a beginner in bacteriology to know the mile posts in the development of the subject, and to understand the difficulties which previous workers had to overcome. The first five chapters, which are equivalent to 181 pages, deal with the principles of bacteriology. These chapters are very complete, particularly chapter 2, which deals with media, and chapter 5, which takes up sterilization and disinfection.

Chapter 6 is on the chemistry of proteins, carbohydrates, and fats. Chapter 7 deals with yeasts and molds, the methods for studying these microörganisms, and their classification. In chapter 8 the intestinal bacteria are considered, together with the factors that influence them. The methods for examining feces for various microörganisms are also given.

Chapter 9 is a brief chapter on the bacteriology of air. This chapter could be enlarged with profit. On the other hand chapter 10, which deals with water hygiene, is quite complete. The author perhaps transgresses the legitimate limits of his subject by considering the chemistry as well as the bacteriology of water. There are also several pages

on the disinfection of water by liquid chlorine and hypochlorite. The bacteriology of ice is also considered. The latest methods for examining water, for differentiating between fecal and non-fecal *B. coli*, and for the isolation of *B. typhosus*, are given.

The chapter on milk and milk products is also complete. The composition of milk, the cultural and microscopical examination of it, the presence of pathogenic bacteria, the dairy score card, and the subject of pasteurization,—all of them are considered, and in addition, the bacteriology of butter, cheese, fermented milks, condensed milk, and ice cream.

Chapters 12, 13, and 14 deal with the microbiology of other foods, such as eggs, meat, meat products, oysters, canned goods, and ketchup. The methods of perserving food are also considered briefly. There is also a brief discussion of food poisoning. The chapter on the bacteriology of eggs contains numerous photographs which are both attractive and instructive.

The last chapter deals with epidemiology very briefly, particularly in connection with foods such as water, milk, and oysters. This chapter is followed by an appendix which contains numerous tables for specific gravities, solubility of oxygen in water, equivalents of all kinds, and the equivalents of factors used in foreign systems. There are also directions for preparing standard solutions which are necessary in the laboratory.

On the whole, the volume represents a contribution to the available books on bacteriology, particularly those dealing with the bacteriology of foods. It is exhaustive in most of the things that are considered. At the end of each chapter an extensive bibliography on the particular subject under consideration is given. Certain things like the cycles of nitrogen, carbon, and sulphur are omitted. The index too, is scanty for a treatise of this size and worth. It is a book which is recommended very highly to all those interested in general bacteriology, and in the bacteriology of water, milk, and solid foods. *Murray P. Horowitz, M. S.*

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The Rockefeller Foundation, Annual Report for 1917.

It is only on looking through a volume like this that one realizes the tremendous energy of the Rockefeller Foundation. There is no corner of the earth into which the International Health Board has not penetrated with the activity of its agents and its influences for good. It has been working with the Red Cross and the camp commissions. It has been caring for victims of infantile paralysis, and, with a world-wide research staff, has been helping governments to assume responsibilities. Its campaign against malaria is already fairly well known to the American public, but the plannings to eradicate yellow fever are not so fully understood. The principle underlying these is to select those localities in which the disease is endemic and eradicate it at these foci of its distribution. A novel feature has been its floating dispensary and hospital, a ship which plies about the warm waters of the Philippine Islands acting as a dispensary at the ports at which it calls and serving for a hospital and means of transportation to one of the base hospitals, which have been established at Jolo and Zamboanga. The medical education undertaken in China would be a splendid work for any single institute, but here the Foundation as only one of its activities has joined forces with the Y. M. C. A. and Chinese Medical Association. It is building its own medical college which, with laboratories and accessories, will be a model medical center in the midst of the capital of this Oriental country, and this center is not to be the only one in that country. In a still different line of work, have been travelling scholarships, in which those who are to work in distant countries may have their foundations laid in the best medical and sanitation schools in the world.

It is hardly more than a decade since hookworm was discovered to be a disease of the Southern States. Its progress through Europe from Italy through other mining countries, even into Wales, was then an interesting story, but no one realized at the time the world-wide distribution of this intestinal malady. The International Health Board has established its stations on the islands of the Pacific, on the continent of Australia, in strange, uncivilized New Guinea, in the East Indies, with outlying stations in Farther India, China and Ceylon. Africa, many points in South America, the Cayman Islands in the West Indies and a dozen stations in the Southern States of this country have been the centers of work in this single disease, of which, for the first time, a world survey has been made. Some of the figures are extraordinary. In the valley of the Ganges, for example, an examination of 600 persons showed an infection of 99.9 per cent, while in Brazil, along the Amazon, there was an infection of about 10 per cent less. This will serve to show the nature of the campaign against the disease. The economic results of this single effort alone cannot fail to be enormous, since it is a malady which affects directly the output of the individual. Soil sanitation is one of the means of control, for the disease, it should be understood, is one that is most effective in a country with bare-footed population, unprovided with regular outhouses or latrines. In Ceylon one of the results of the work of the board has been the installation of not less than 20,000 latrines within the year. In these matters the Foundation not only furnishes

the stimulus but not infrequently a considerable portion of the financial support.

Anti-tuberculosis work was carried on during the year in France in connection with the French government and the Red Cross. The splendid way in which this campaign has been fitted to the psychology of the French people, without losing any of the vigor and push of American initiative, is a model in this kind of educative work in which it is necessary to interest a people.

It will not do to neglect the war work of the Rockefeller Institute for Medical Research, whose efforts would have been justified had nothing further resulted save the Carrel-Dakin methods. The war demonstration hospital of the Institute was available further as a school of inestimable value to the medical officers of the Army and Navy.

Every health officer, every physician, every student, every citizen should know of this splendid humanitarian work, fundamental as it must prove to be in the freeing of the world from the incubus of communicable disease.

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"Journal of Industrial Hygiene."—Volume I, No. 1, of a new monthly periodical, *The Journal of Industrial Hygiene and Abstract of the Literature*, appears with the May, 1919, issue thereof. In 1918, Harvard University received a fund which permitted, among other things, of the inception of this journal, which is the first periodical in the English language devoted entirely to the interests of industrial health. It contemplates wide vision in the problems concerned. It is to publish articles of current interest in industrial hygiene, medicine, surgery, vocational training, and welfare work. An appeal is made to industrial physicians to record their experiences and observations in its pages. The first issue is a volume of about 100 pages, 8 x 11, bound in heavy brown paper, and published by the MacMillan Company. Four weighty papers comprise the body of the first issue, while papers by a long list of persons well known in the field are advertised for succeeding numbers. The balance of the first issue is devoted to the Abstract of Literature, which is to be a special feature of the *Journal*. For this purpose, about 200 periodicals and publishing agencies have been listed for abstracting. This work is done by a staff of 42 abstractors and reviewers. Abstracted material is arranged under 25 subject headings. A limited amount of selected advertising is also carried. The editors are David L. Edsall (*United States*), A. F. Stanley Kent (*Great Britain*); honorary contributing editor, Thomas M. Legge; associate editors, W. Irving Clark, Alice Hamilton, Emery R. Hayhurst, Yandell Henderson, William H. Howell, Frederic S. Lee, Harry E. Mock, J. W. Schereschewsky, C.-E. A. Winslow; managing editors, Cecil K. Drinker and Katherine R. Drinker. The American subscription rate is $5.00 and the foreign rate, $6.00 per year. The *business offices* are the MacMillan Company, 64–66 Fifth avenue, New York City; *editorial offices*, 240 Longwood avenue, Boston, Massachusetts.

[Abstracts of articles in the new *Journal*, appropriate for our notes, will appear regularly in this section.] (*E. R. H.*)

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"Modern Medicine."—The first number of *Modern Medicine*, a new monthly magazine, makes its appearance with the May, 1919, issue. It announces its policy as "the application of medicine and allied sciences to industrial efficiency and national health." In addition to considerable space devoted to original articles of a general nature, there are sections under the headings of Medicine and Industry, The Nation's Health, Problems in Social Medicine, and The Month in Medicine. The editorial staff consists of Alexander Lambert, S. S. Goldwater, Otto P. Geier, C.-E. A. Winslow, and Walter W. Hamberger, with John A. Lapp as managing editor. The Modern Hospital Publishing Company, Chicago, Illinois, are the publishers. Subscription rate is $3.00 per annum. The first issue consists of 92 pages of reading matter and 60 pages of advertisements. The magazine is attractive in appearance, the material is well arranged and printed on good paper. It should prove of distinct value to "physicians and others interested in administrative, industrial and social problems." [Readers of these pages of the JOURNAL may expect to see abstracts from *Modern Medicine* at regular intervals.] (*R. P. A.*)

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Don't Fail to be at New Orleans,
October 27-30, 1919.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HOROWITZ and MAYO TOLMAN.

Great Hospital for Chinese in France.—The largest hospital in the world exclusively for Chinese is not in China, but in France. It serves the many Chinese who have come into France, of whom 140,000 are laborers, who have been employed in various capacities in the prosecution of the war. The location of the hospital is on a hill in the village of Noyelles, near the mouth of the River Somme in northern France. It was built for about 1,500 patients but for emergencies has held 1,800. The chief of staff is Colonel Gray, formerly of the British Legation, Peking, who is assisted by sixteen physicians and about 300 nurses and attendants. Quite a number of the assistants are medical missionaries, who have been in China and understand the psychology of the Chinese, which, it is said, has been one of the serious problems.

The buildings are good in construction, conform to the Chinese custom of limiting the height to one story, and are arranged on the sides of short streets running into a wide central road. Each building has its stove for heating purposes and is furnished with plenty of windows for light and ventilation. There is a detached area, with high barbed wire entanglements and guarded, for the insane, of whom there are 60, while another separate place is provided for lepers, of whom there are 16.

This remarkable hospital has most modern equipment. There are medical and surgical wards, with special ones for tuberculosis, influenza, trachoma, venereal and contagious cases and, in addition, an emergency ward. The operating section has adjoining X-ray and sterilizing rooms; there is a convenient laboratory with an outfit of rabbits and guinea pigs; the camp is furnished with an incinerator for refuse and garbage, and on the outskirts there is the graveyard in which 350 laborers lie buried. Their companions have raised a fund to erect in Peking a memorial to those who have given their lives to the great common cause.

The JOURNAL is indebted for these particulars to Dr. W. W. Peter, whose work in China in the great anti-tuberculosis and health education movement has attracted so much attention. During his stay in France he was called upon to visit the hospital, and while there continued his educational work, his experience in China having given him good command of the complicated language. It was interesting that at a lecture with lantern slides, to the staff, he was able to show to the company pictures from his own camera of the work in China which showed the faces of the medical missionaries present, transferred like himself to labors on the opposite side of the globe.

Aside from the medical aspect of the situation, Dr. Peter considers that the presence of so many Chinese in France means very much for the future of China. Although these men are seeing the sad side of our western civilization, their experiences in the hospitals and in the huts of the Y. M. C. A. will do much to offset this. They will be, on their return, the popular men in their home districts, and like other travelers will be centres of public information, and will probably, in their own country, have a larger hearing than has been accorded to any foreigners. It is most important, therefore, that they have the opportunity to see the better side of our life.

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What Has the Health Demonstration Done for Framingham?—Dr. Donald B. Armstrong, the executive secretary of the Framingham Health Demonstration, summarizes the work of the experiment as follows: More than 6,000 citizens have been thoroughly examined, and 4,000 referred to physicians for treatment; 250 cases of tuberculosis, mostly incipient, have been discovered and brought under treatment. Every aid has been given local authorities in the treatment of cases of tuberculosis. An expert medical consultation service was placed at the service of physicians free of charge. Expert medical aid was given free of charge to the local draft board. Children having nose, throat and glandular defects have been followed up, and remedies applied wherever possible. A course of lectures by well-known experts was given for the benefit of the local physicians. Much was done in attempting to control the ravages of influenza. A model X-ray machine has been placed at the service of the physicians to aid in the diagnosis of tuberculosis and other diseases. Infant welfare work was conducted. A summer camp for 400 pre-school age children was held in order to discover and remedy diseases and defects. A dental clinic was established for the school children. The health of the worker in industry has also been safeguarded as much as possible. Classes in domestic science and food economy were held. The milk supply was investigated and improved. The general health conditions of Framingham were studied. In addition a very extensive campaign in public health education was conducted, besides coöperating with every agency in the city, interested in promoting good health. *Journal of Outdoor Life*, March, 1919.

(*M. P. H.*)

New Idea in Posters.—There is much more in the way of convenient use for educational purposes of the poster of the Massachusetts Health Committee, headed, "Cancer is Curable," than may at first appear. It is part of a nation-wide campaign to reduce the mortality from cancer, which, as vital statisticians know, is very rapidly forging to the front rank among causes of death. How serious it is is evident from the fact that it carries off from 90,000 to 100,000 citizens each year. The poster, a facsimile of which is herewith presented, has been well considered with reference to reproduction anywhere. It is the intention of the committee to secure a wide distribution of the stock, which it has printed in quantity, but at the same time there are opportunities in the presentation of its form in newspapers, or in special reprints where the local authorities may wish their own posters, for which the printed posters will not serve.

To care for all these contingencies, first the type of the poster was considered and it was carefully so selected that the fonts needed to reproduce it are among those to be found in any good printing office in the country. Then for a guide to the printer the committee has issued a short list of the fonts necessary. Any body or any association may thus duplicate the poster, which contains no freak type. Then with the measure of the poster, 12½ inches by 9½, the printer may make the precise reproduction of the standard, which is the more impressive since it is everywhere alike, and conveys everywhere the same message.

Cancer is Curable
By an Early Operation
In the first few weeks usually a slight operation — to be neither extensive nor expensive — is all that is necessary.
A later operation is bound to be more serious and may do no good! Early operation is the only cure. Medicine is useless.
These are Danger Signals
for Men and Women Over 40
If mouth or throat soreness, cracks in the skin or ulcerations do not heal quickly —
If a mole, a wart or a birthmark changes color or shows signs of irritation —
If you are a woman and notice any mysterious symptoms —
If your stomach is always sick and you are getting thin —
If there is a lump in your breast.
Cancer Attacks
more men and women over 40 than does tuberculosis, pneumonia, typhoid fever or any chronic disease.
Cancer Kills
every year 80,000 U. S. citizens over 40 years of age: one man in every 14 of that age and one woman in every 8.
"So Preventable Early and So Incurable Later"
If you think you have cancer, do not give up in despair and do not waste precious time with quacks or with so-called cancer cures.
Most cancers at the beginning are in positions which permit of complete removal by a very slight surgical operation — not to be dreaded at all.
Don't wait! Act quickly! It is the delay that brings suffering and untimely death.
Detailed Information and Free Advice
Mailed Immediately on Application
MASSACHUSETTS HEALTH COMMITTEE
525 BOYLSTON STREET, BOSTON

Medical Examination Campaigns.—In order to obtain an accurate cross section picture of illness in a supposedly normal group with special reference to tuberculosis, the members of the Framingham Community Health and Tuberculosis Demonstration carried out two medical examination campaigns. Out of a total of 4,473 individuals examined 77 per cent were recorded as ill. The definition of illness adopted in this study included any disease or defect which, in the opinion of the examiner, showed the individual to be in need of medical or dental advice or treatment, so that the amount of illness disclosed included minor as well as serious affections. In fact serious illness constituted 25 per cent of all examined.

With regard to preventability the examinations showed that 64 per cent were suffering from affections which might be considered as directly preventable; 22 per cent were partially preventable, and only 14 per cent entirely non-preventable.

Concerning tuberculosis, 96 cases were discovered, or a rate of 2.2 per cent for the total number examined. Of these 25 cases were incipient, 17 cases were advanced, and 54 were arrested. For the three most prominent nationalities, the tuberculosis incidence rates were, American, 2.58 per cent; Italian, 0.48 per cent; Irish, 4.85 per cent. Of interest, bearing on the question of tuberculous infection as contrasted with tuberculous disease, are the results of the tuberculin survey on children between the ages of one and seven years. The percentages of positive reaction according to nationality groups in the latter survey were American, 18 per cent; Italian, 51 per cent; Irish, 30 per cent.

Contrasting the efficacy of medical examination campaigns with the health census this study shows that the former method will bring out twelve times as much illness as the latter.—Framingham Community Health and Tuberculosis Demonstration, *Monograph No. 4.* (*D. G.*)

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Factors Affecting the Antiscorbutic Value of Foods.—In infants the question of scurvy centers about the milk supply. An infant requires fully one pint of fresh raw milk daily to protect it from this disorder. If the milk is pasteurized, or stale, or heated for a second time, or rendered more sensitive to deterioration by means of an alkali—and particularly if more than one of these influences are operative—more than a pint is needed. The fact that there is an inverse relationship between the amount of milk consumed and the tendency to scurvy shows that we are not dealing with an exogenous toxin and argues in favor of the disorder being primarily a deficiency disease.

Milk does not necessarily lose its antiscorbutic value in the course of drying. If it is dried rapidly even at a temperature of about 240° F. it retains sufficient of the protective factor to have curative value, provided, naturally, that it was fresh at the time of drying. In considering the question of destruction of the "vitamin" by heat or by alkali, the duration of exposure to the detrimental influence is of the greatest importance.

Babies fed on pasteurized milk should receive an antiscorbutic from the time they are a few weeks of age, as there is no reason for allowing the negative balance of "vitamin" to continue for a longer period. A small amount of orange juice will answer the purpose, and is potent for a period after alkalinization.

Strained canned tomatoes have been given in place of orange juice to a large number of infants, and this has been found a very effective antiscorbutic, and is well borne by babies a few weeks of age. It has the advantage of low cost and availability and, therefore, is of particular value for the infants of the poor. A. F. Hess and L. J. Unger, *Amer. Jour. of Dis. of Child.* April, 1919, 221.

(*D. G.*)

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Proper Cleansing of Soda Fountain Glasses.—The danger of transmitting disease germs through improperly washed soda fountain glasses has been realized for some time. The problem received particular attention during the recent epidemic of influenza-pneumonia. Recently the New York City Department of Health inspected 1,751 soda fountain stores in Greater New York and found that 296, or 13.7 per cent, were violating the law regarding the proper cleansing of cooking, eating and drinking utensils. The law requires that each glass be washed in a hot solution of soap powder or soda with the employment of a brush or other effective implement of friction. After this the glass is supposed to be rinsed in clean, hot water or sterilized.

According to some experimental work that is being conducted in the research laboratories of the New York City Department of Health, it appears that the glasses can be freed from danger simply by dipping into a 2 per cent or weaker solution of chlorine, and then rinsing in running water. The chlorine water is prepared from a saturated, standardized solution of chlorinated lime. Another effective means of sterilizing the glasses is by the use of steam for thirty minutes after each glass has been thoroughly washed. This method is said to be inexpensive. *American City,* April, 1919.

(*M. P. H.*)

STATE HEALTH NOTES—LEGISLATION

United States.—*New Federal child labor law declared unconstitutional.*—On the ground that it sought by indirection in the use of the Federal taxing powers to accomplish the regulation of employment and that this was an invasion of the States' regulatory authority, Federal Judge James E. Boyd has declared the child labor section of the War Revenue Bill to be unconstitutional.

The section in question is Title XII of the Revenue Act of 1918, of which the principal section reads as follows:

"That every person (other than a bona fide boys' or girls' canning club recognized by the Agricultural Department of a state and of the United States) operating (a) any mine or quarry situated in the United States in which children under the age of sixteen years have been employed or permitted to work during any portion of the taxable year; or (b) any mill, cannery, workshop, factory, or manufacturing establishment situated in the United States in which children under the age of fourteen years have been employed or permitted to work, or children between the ages of fourteen and sixteen have been employed or permitted to work more than eight hours in any day or more than six days in any week, or after the hour of 7 o'clock post-meridian, or before the hour of 6 o'clock ante-meridian, during any portion of the taxable year, shall pay for each taxable year, in addition to all other taxes imposed by law, an excise tax equivalent to 10 per centum of the entire net profits received or accrued for such year from the sale or disposition of the product of such mine, quarry, mill, cannery, workshop, factory or manufacturing establishment."

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Ontario.—The act for the establishment of a Federal health department for the Province has passed the House of Commons and is now in the Senate.

*

Colorado.—A bill was passed at the last legislature providing for a detention home for women suffering from venereal diseases.

*

Georgia.—This state has awakened to the importance of legislation with reference to venereal diseases. During the summer a bill is to be presented to prohibit persons affected with venereal disease from working in hotels, restaurants, at soda fountains or in any place where food is handled for human consumption.

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Iowa.—Legislation under way or ratified. The legislature, 38th General Assembly, just adjourned, enacted a law for the control of venereal disease in the state of Iowa, making an annual appropriation of $15,000 which with a like amount received from the government, will make available $30,000 annually for Iowa. It is an excellent law. There is also a new housing law, just passed, which is approved by the National Housing Association. A new law now provides that Spanish influenza shall be quarantinable in this state. The board of health appropriation was increased, the epidemiology and laboratory appropriation was increased and, in short, it has been said that the 38th General Assembly of Iowa was a public health legislature.

There is a new hotel inspection law, which requires all hotels in the state to pay an annual license according to number of rooms, and the department maintains three inspectors to check up and inspect hotels. Iowa has had a hotel inspection department, but the law did not provide for the licensing of hotels. It provided only for the inspection of same and when inspected a fee was charged and a certificate of inspection given. Iowa has 1,568 hotels.

*

A new housing law has just been adopted by the Iowa state legislature. This is a most carefully prepared law and will bring much benefit to the people of the state. The law becomes effective July 4, 1919. A copy of the new *Housing Bulletin*, issued by the Iowa State Board of Health, may be obtained by addressing Dr. Guilford H. Sumner, secretary, executive officer, Iowa State Board of Health, Des Moines, Iowa.

*

Missouri.—The bill before the General Assembly for the establishment of a Bureau for the supervision of mental defectives and also a bill providing for the use of silver nitrate in the eyes of infants, have both been defeated.

*

New York.—*New Laws Relating to Public Health at the End of the Legislative Session of 1919.*—Chapter 40. An act to amend the public health law, in relation to certain contagious diseases, provides for the detention of a person suspected of having any infectious venereal disease until the results of a laboratory examination are known. It also provides for such examinations in the cases of certain persons under arrest.

Chapter 57. An act to amend the county law, in relation to county tuberculosis hospitals. This new law has special reference to Madison County.

Chapter 209. An act making an appropriation for the prevention, control and treatment of venereal diseases. This law appropriates fifty-five thousand dollars ($55,000), and specifies the distribution by

creating a special laboratory unit and indicating employees thereof with their salaries.

Chapter 213. An act to amend the public health law, in relation to vital statistics. Amends section 372 relative to the appointment of a registrar when a district is divided into two or more primary registration districts, or when two or more primary districts are combined, and indicates how remuneration and expenses of the registrars of such districts shall be paid. Amends section 373, providing that no licensed undertaker or embalmer or person employed in such business shall be eligible for appointment as a registrar of vital statistics. Amends section 389 by providing that registrars within ten days after receiving the certificate of any birth shall mail to the parents or guardian of the child a certificate of registration on a form furnished by the state commissioner of health. This certificate of registration shall be accepted by public authorities in the state in the same manner as certified copies of birth certificates. The registrar is to make a notation on his copy of the original birth certificate indicating the date of issuance of such certificate of registration. Section 390 provides that each midwife shall also receive fee for registering births. Under this section each local registrar is to be paid the sum of two dollars for the monthly report on such form as may be provided or required by the commissioner.

Chapter 234. An act to amend the public health law, in relation to the definition of chiropody.

Chapter 421. An act to amend the public health law, relative to the establishment of hospitals or camps for the treatment of pulmonary tuberculosis. It has special reference to Warren County.

Chapter 423. An act to amend the public health law, in relation to consolidated health districts. Makes the supervisors of each city included in a consolidated health district members of the board of health; except that if the number so provided is more than seven such members shall meet and elect a board of health of three members for such district, and provides for a certain term of office thereof.

Chapter 502. An act to amend the code of criminal procedure, in relation to the definition of vagrant . . . with reference to the subject of prostitution.

The following laws were also enacted during the 1919 legislative session:

Chapter 250. An act to amend the general municipal law, in relation to convention expenses of municipal officers and employees.

Chapter 353. An act to provide for a department of public health in and for the city of Syracuse.

Chapter 359. An act to amend chapter six hundred and eighty-five of the laws of nineteen hundred and five, entitled "An act to supplement the provisions of law relating to the department of public safety of the city of Syracuse," in relation to the bureau of health.

Chapter 455. An act to amend the village law, relative to the acquisition of private water systems.

Chapter 523. An act to amend the town law, in relation to the enlargement and extension of water districts.

Chapter 590. An act to create a commission to confer with committees of Congress, in relation to Indian affairs, and making an appropriation for the expenses of the commission.

Chapter 615. An act to authorize the investigation of the extent and character of and methods for eliminating the pollution of streams, and making an appropriation therefor. Appropriates ten thousand dollars ($10,000).

*

North Carolina.—Legislation aimed at controlling venereal diseases in North Carolina was enacted by the recent General Assembly. This legislation requires that all cases of venereal diseases be reported to the State Board of Health by the attending physician. The reports are made by identification numbers which are supplied by the physician and the name of the patient is not divulged as long as treatment is continued until a cure is effected or the patient has been rendered non-infectious. In cases where the patient fails to continue treatment the doctor is required to report the matter to the bureau of venereal diseases of the State Board of Health, and if the patient still refuses to be treated he is quarantined and his name is given out.

The first indictments under the new law have been made and two physicians were fined $25 each.

*

North Dakota.—A bill was passed at the recent legislature requiring a public health nurse for every county in the state, on petition in writing by two thirds of the school directors of the county.

*

Ohio.—The Hughes bill has become a law. Changes recently made by the legislature in the Ohio laws governing tuberculosis hospitals do not forecast any change in the policy of the state toward these institutions. Hospital measures passed are:

The Harter bill, permitting a county which holds membership in a tuberculosis hospital district to provide additional local facilities at its own expense for the care of tuberculosis sufferers, if the district hospital fails to provide adequate accommodations.

The Crosser bill, authorizing a county in a hospital district to withdraw from membership and sell

its interest to any other county in the district, if this action is approved by the State Department of Health.

The Gardner bill, authorizing a county in which a municipal tuberculosis hospital is located to establish a county hospital or to buy or lease the existing municipal hospital.

All of these measures were drawn to fit special cases. The first two were designed to provide a means of settling difficulties between the counties in the Springfield Lake Sanatorium district. The Gardner bill is intended to provide a means to transform the Cincinnati municipal hospital into a county institution. Under former law, no authority for the establishment of county hospitals exists and a county in which a municipal hospital exists may not enter a district organization.

The district hospital law remains unchanged in its essential details, and the policy of the State Health Department will be to continue encouraging the development of additional districts. Five district tuberculosis hospitals are in operation and two other proposed districts have effected preliminary organizations. Any group of from two to ten counties may by voluntary organization join in establishing a district. It is estimated that the state now has hospital accommodations for only one third of the tuberculosis sufferers who need hospital care.

The power of the State Department of Health to enforce its orders for sanitary improvements in Ohio municipalities was restored by the legislature just before it adjourned for recess.

The passage of the Ritter bill puts the Bense law, granting the department authority to order such improvements, back in its original form. At its last previous session the legislature inserted provisions which have worked out in practice to hold up many important improvements.

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Oklahoma.—The recent legislature passed a bill for the erection of three tuberculosis sanatoriums.

❖

Tennessee.—After an anti-vice bill had received a large vote of approval in the legislature, it was vetoed by Governor Roberts, who thus places this state in a unique position in the Union. The fight has not been given up, however, for it is believed that existing laws may be made available for such work as to enable Tennessee to take advantage of the Federal appropriation, which here would amount to $23,755.31.

❖

Wisconsin.—Satisfactory progress of the health legislation program is being made in the state legislature. Among bills either fully enacted or having passed both houses are the following: Making influenza a reportable disease; authorizing local health boards to order closed schools, churches, theatres, and public assemblages for control of influenza; legalizing delayed vital records; classing chancroid as a venereal disease and prohibiting druggists from prescribing and circulation of advertisements of cure; requiring every municipality to establish one or more public comfort stations; creating a department of occupational therapy at county tuberculosis sanatoria; authorizing counties having county sanatoria to provide out-patient departments to encourage follow-up activities; prohibiting use of vehicles for purposes of prostitution (a measure for venereal disease control).

The bill fostered by the state board bringing all water and ice supplies and sewerage works under control of the state board passed the lower house, 75 to 0, and its final enactment is believed certain. The bill requiring all counties to employ a county public health nurse passed the assembly and is before the senate. The bill exempting local health officers from liability for acts performed in pursuit of their duties was killed—the only health measure of major importance thus far to suffer defeat.

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STATE HEALTH NOTES—GENERAL

Ontario.—The Ottawa Health Society gave a demonstration of its spirit when in April nearly one hundred persons appeared before the city council to demand an extension of the district nursing society, and the control by the health board of the school nurses in all classes of schools.

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District of Columbia.—The district officials have issued special circulars of warning to the proprietors of stores in which articles are for sale which the purchaser may be tempted to put into his mouth, and then return to the stock. One poster is addressed to the salesmen of cigar holders, pipes and the like, while another has been circulated among the stores which deal in toys including horns, mouth organs and blow balloons. All these different kinds of posters and circulars tell of the danger of conveying infection by such procedure.

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Illinois.—The State Department of Public Health has received reports of ninety cases of lethargic encephalitis. Fifty-five of these patients are located in Chicago and the remainder scattered throughout the state. All cases of lethargic encephalitis have been investigated by a representative from the Department of Public Health, the diagnosis being confirmed and the clinical phases checked up.

By a joint resolution of the General Assembly, the week beginning May 11 was designated as Health Promotion Week and was observed by all governmental and extra-governmental health agencies in a wide campaign of health education. A Health Promotion Week Committee, made up of the executive officers of state health organizations, was headed by Governor Frank O. Lowden as honorary chairman, and Dr. C. St. Clair Drake, as chairman. The general program was under the direction of W. D. Thurber, executive secretary of the Illinois Tuberculosis Association, whose services were loaned to the state for that purpose. It is expected that Health Promotion Week will be observed each year and that it will result in a much closer coördination of all health agencies in Illinois.

Health Promotion Week, from May 11th to 17th, designated by a joint resolution of the General Assembly of Illinois for the coördination of all governmental and extra-governmental health and social agencies to meet the problems of reconstruction, was observed with remarkable enthusiasm throughout the cities, towns, and rural districts of Illinois. This coördination of public health activity was supervised by the State Department of Public Health and was directed by Walter D. Thurber, executive secretary of the Illinois Tuberculosis Association, whose services were loaned to the state by that organization. In addition to the health and social agencies, active coöperation was afforded by the State Press Association, the State Federation of Women's Clubs, the State Federation of Labor, the State Parent Teachers' Association, the State superintendent of public instruction, the State Manufacturer's Association and the state organization of Chambers of Commerce.

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Indiana.—The Twenty-fifth Annual Health Officers' School was held under the auspices of the Indiana State Board of Health at Indianapolis, May 5th and 6th. Over three hundred were in attendance. The following notice from the State Board of Health explains the why and wherefore of the Health Officers' School.

"To Health Officers: This Conference is a school for the study and discussion of questions pertaining to your duties as a health officer. Your community is paying your expenses and has a right to expect you to attend the sessions, to take part in and to be benefited by this school."

The occasion was made the more notable through the presence of Hon. Peter H. Bryce, chief medical officer of the Canadian Immigration Service; Hon. Charles Hastings, medical health officer of the Province of Toronto; and Dr. Lee K. Frankel and A. W. Hedrich, president and secretary, respectively, of the A. P. H. A. Some of the important papers presented were: "The Burden of Feebleminded-ness," by Mr. Amos Butler, secretary of the State Board of Charities; "The Fight Against Venereal Diseases," by Dr. F. W. King; "Heredity and Public Health," by Professor D. B. Myers of the Medical Department of the State University; "War Neuroses," by Dr. C. D. Humes of Indianapolis, formerly major in the U. S. Medical Corps and "The Army Surgeon and His Health Work," by Lieutenant Colonel George B. Lake, commanding officer, U. S. General Hospital, No. 25, Fort Benjamin Harrison. According to Dr. J. N. Hurty, state health commissioner, Colonel Lake was formerly health officer of Wolcottville, Ind., and in this position he made such a thorough cleaning-up of the town as to incur the displeasure of all the "peanut" politicians within its borders.

On May 6 an enthusiastic gathering of Indiana health workers, assembled in Indianapolis, was the beginning of the Indiana Public Health Association. The subject had been presented the day before by Dr. Lee K. Frankel, president of the A. P. H. A. in an address before a meeting of the health officers of the state. In response to this about one hundred persons attended the organization luncheon at the Claypool Hotel at which Dr. H. A. Cowing, president of the Indiana State Board of Health was chairman.

Dr. J. N. Hurty, state health commissioner, Dr. N. D. Berry of Muncie, and Dr. F. Shoemaker of Bluffton presented a report on a constitution.

Dr. J. N. Hurty was named temporary chairman, and Dr. Ada E. Schweitzer of Indianapolis, temporary secretary.

It is planned for the I. P. H. A. to have a broad membership taking in all persons interested in public health and working in affiliation with existing specialized health organizations. Twenty-one applications for membership in the A. P. H. A. were presented by the health officers at the meeting and thirteen others have been received since.

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Iowa.—The situation in Iowa for the care of tuberculosis has been outlined for the JOURNAL by A. E. Kepford, state lecturer, on the disease and its treatment.

The campaign against tuberculosis in Iowa has been in active progress for fourteen years. As a result of the agitation some ten years ago, the state sanatorium was established near Iowa City for the care and treatment of persons afflicted with tuberculosis. The institution was established in the beginning for incipient cases only. Later the law was amended, including all classes of patients. Accordingly a hospital for the advanced incurable

cases was established as a part of the sanatorium. This increased the capacity to 250 beds.

The state sanatorium, being inadequate to meet the needs of a population of approximately 2,500,000 people, has been relieved by the establishment of several county hospitals for the treatment of tuberculosis. The pioneer county hospital is Pine Knoll, at Davenport. This institution was opened about eight years ago and has now reached a capacity of 66 beds.

The second county to establish a hospital was Wapello, whose institution is located at Ottumwa. This hospital is in its early stages of development and has a bed capacity of 20.

Dubuque County is now building in the city of Dubuque a sanatorium which will have a capacity of 80 or 100 beds. Several other counties in the state have voted funds for the construction of county institutions.

Pottawattamie, Mills and Harrison counties, through the American Red Cross, have bought a beautiful site within the corporation of Council Bluffs and are now engaging in the construction of an initial unit of 40 beds.

There is at Fort Dodge a private institution, owned and operated by Dr. J. W. Kime, a pioneer in the open air method of treatment of tuberculosis. His sanatorium is known as Boulder Lodge and has a capacity of 20 beds.

A number of counties are now agitating for tuberculosis hospitals.

At the present time there are nine clinics in operation under the auspices of the United States Public Health Service and the Iowa State Board of Health. The expense of these clinics is borne by the County, State and United States Public Health Service. The clinics are free, all the medication being furnished by the government. Not only are these clinics being used as medical centers, but much needed education is being sent out from these quarters.

In the next few weeks there are to be established eight more clinics making a total in all of seventeen clinics. These new clinics are to be established and maintained in the same manner as those already in operation.

The Iowa State Board of Health has just issued 25,000 of its *Bulletin for Boys*. This is a pamphlet of forty-eight pages, well illustrated, and should be studied by the youths of the country as well as the state. This is a part of the campaign of useful education by the state board, which is distributing the bulletin, *Keeping Fit*, free to any who apply. The headquarters of the board is Des Moines.

One of the Iowa associations in Des Moines has undertaken to supplement the local public health work by a new film, entitled, "The Solitary Sin." This teaches the principles which are modestly presented and are very necessary to the proper education of the youth of the country.

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Kansas.—In spite of the pleas of certain manufacturers for a reconsideration of the rule prohibiting saccharine, the United States Department of Agriculture has refused to change the rule. No saccharine may be used in food products offered for sale to the public in Kansas.

✠

Minnesota.—A meeting was held at Princeton, Mille Lacs County, Minn., for the purpose of organizing a County Health Association. The organization committee included: Chairman, Olaf Wasenius, county superintendent of schools; O. A. Dahlberg, county agricultural agent; C. H. Nelson, chairman of the Red Cross; and two ladies, Mrs. J. F. Petterson and Mrs. E. Evans.

The Kanabec County Public Health Association in Minnesota has been organized. On March 10 the meeting was held at the court house in Mora. A constitution and by-laws were adopted and an executive committee elected. President, Mrs. Clark Brunswick; secretary, E. T. Baumhofer; treasurer, Almer J. Peterson; vice-presidents, A. T. Westrom and Mrs. Charles Reynolds.

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New Mexico.—Governor O. A. Larrazolo of New Mexico has appointed the members of the new State Board of Health. John Tombs of Albuquerque, executive secretary of the New Mexico Public Health Association, is executive secretary of the board; Dr. John F. Pearce, also of Albuquerque, is to be the medical member; H. O. Bursum of Socorro is the third appointee and, with the selection of a commissioner of health promised soon, the organization will be complete.

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New York.—*Physicianless New York Communities.*—The attention of the JOURNAL has been called to the fact that there are in New York state a number of rural communities which are in effect without medical service. There are without question physicians to whom such a situation may appeal, and the JOURNAL here presents a list of such communities together with the name for each one of some person from whom further particulars may be obtained.

Community	*County*	*Can give information*
Wyoming	Wyoming	Mr. Myron Kelley, Wyoming, N. Y.
Groveland	Livingston	Dr. J. Kirby Collier, Sonyea, N. Y.
Cameron	Steuben	Mr. G. L. Williamson, Cameron, N. Y.
Enfield Center	Tompkins	Mr. F. D. Rumsey, Newfield, N. Y.
Moravia	Cayuga	Dr. S. N. Thomas, Moravia, N. Y.

Virgil	Cortland	Mr. Harmon Sheerar, Virgil, N. Y.
Altmar Redfield Williamstown	Oswego	Mr. Charles Nichols, Richland, N. Y.
Chittenango	Madison	Dr. R. A. Warner, Health Officer, Chittenango, N. Y.
Turin	Lewis	Mr. Ray Cornish, Turin, N. Y.
Hammond Rensselaer Falls Benson Mines	St. Lawrence	Dr. Stanley W. Sayer, Gouverneur, N. Y.
Malone Brushton	Franklin	Dr. Stanley W. Sayer, Gouverneur, N. Y.
Putnam	Washington	Miss Elizabeth M. Sweatt, care Red Cross, Putnam, N. Y.
West Hebron	Washington	Mr. Peter Burseno, West Hebron, N. Y.
Rockwood	Fulton	Mr. Chas. J. Flinn, Rockwood, N. Y.
Starkville	Herkimer	Mr. J. H. Hall, Starkville, N. Y.
Schuyler Lake	Otsego	Mr. Lee J. Chase, Schuyler Lake, N. Y.
Westford	Otsego	Mrs. A. P. Backus, Westford, N. Y.
West Davenport	Delaware	Mr. Chas. Everett, W. Davenport, N. Y.
Bloomville	Delaware	Mr. E. W. Simmons, Bloomville, N. Y.
Cannonsville	Delaware	Mr. L. F. Kipp, Cannonsville, N. Y.
Treadwell	Delaware	Mrs. C. L. Stoutenburg, Treadwell, N. Y.
Trout Creek	Delaware	Mr. N. A. Wilson, Trout Creek, N. Y.
Rock Rift	Delaware	Mr. H. R. Stoodly, Rock Rift, N. Y.
Halcottville	Delaware	Mr. George Kelly, Halcottville, N. Y.
Arena	Delaware	Mr. Wm. J. Krom, Jr., Arena, N. Y.
Cuba	Alleghany	Dr. B. R. Wakeman, Hornell, N. Y.
Stephentown	Rensselaer	Mrs. Carrie Chaloner, 62 Lancaster Street, Albany, N. Y.
Gardiner	Ulster	Mr. R. Eugene Mattison, Gardiner, N. Y.
Medford	Suffolk	Mr. Hal B. Fullerton, Medford, L. I.
Sterling	Cayuga	Mr. T. A. MacFarland, Sterling, N. Y.
West Leyden	Lewis	Mr. Henry Schmoker, West Leyden, N. Y.
Spafford	Onondaga	Mr. Charles McDaniels Homer, R. F. D. No. 3, N. Y.

A recent report of Miss Ellen Vanderzee, the first visiting nurse to be employed on an Indian Reservation in this section of the country, shows the great necessity for such work among the Indians. In addition to her regular duties, she is planning a social center for young women, and has aided in the distribution of clothing to families in need.

The Cayuga County Board of Supervisors has appropriated the sum of $5,000 for the establishment of a county laboratory at Auburn.

The announcement was made that under certain conditions Red Cross funds could be used to employ public health nurses. The local chapters in the towns of Waverly and East Rochester have already taken advantage of this ruling.

Improvements and additions to public water supply systems at Middleport, Newark, Coxsackie, Herkimer, Nassau, Pulaski, Athens, Westfield, Belmont and Gouverneur, some of which were deferred during the period of the war, are now being actively taken up.

The State Department of Health is planning to have committees organized in every municipality to coördinate the activities of health committees of chambers of commerce, women's clubs and the like. The first committee of its kind was recently formed at Norwich. It is expected that other municipalities will rapidly follow suit.

As a result of interviews by Sanitary Supervisor Ball with members of the Tuberculosis Committee of the Woman's Civic League of Plattsburg, sufficient funds were promised to secure the services of expert diagnosticians for two tuberculosis clinics each month for one year.

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North Carolina.—The following proclamation of Governor Bickett speaks for itself in defining the attitude of this executive with reference to the administration of public health:

PROCLAMATION

"A little child shall lead them." In this celestial saying of the Great Teacher there is a profound biological as well as spiritual truth. In the climb of the race to higher levels better babies lead the way. The crusade for better babies insures a double blessing. It will bring a hardier race, and then the finest traits in men and women come to flower when they are taking thought of these tittle ones.

Therefore, I, Thomas Walter Bickett, governor of North Carolina, do set apart the week beginning May 11, 1919, as Better Babies Week, and during this week urge our people to study and put into execution all the plans devised by the State Department of Health for preserving the lives and promoting the health of babies in North Carolina.

T. W. BICKETT,
Governor.

Vance County has made provision for a full-time county health department. The department has been arranged for by the coöperation of the county with the State and International Health Boards and a three-year plan of work has been agreed upon. The personnel will consist of a health officer, an office assistant and a nurse for rural sanitation and infant hygiene work. Vance will be one of the ten counties in which the State Board of Health is assisting in health work, the others being Davidson, Forsyth, Lenoir, Nash, Northampton, Pitt, Robeson, Rowan and Wilson.

With a desire to call the attention of school children in North Carolina to the large number of children under five who die annually in the state and to those conditions which contribute to their death,

and with the hope of attracting through the school children the attention of mothers and fathers to these facts and conditions, the Bureau of Infant Hygiene of the State Board of Health has offered a prize of $10 for the best composition, composed and written without assistance, giving ten contributing factors to diarrheal diseases of infants under two years of age, and the best methods of removing these conditions.

The State Board of Health of North Carolina calls attention publicly, in a bulletin widely circulated throughout the state, to the fact that the state laws protect cattle better than they do humans.

It is a significant fact that the laws of the state of North Carolina afford better protection to the live stock of the state than is provided for the citizens. Mr. M. W. Wall, farm demonstration agent for Northampton County, has just returned from Ohio with a carload of thoroughbred milk cows. Before being allowed to bring these cattle into the state he had to have them tested for tuberculosis. The state law prohibits any cattle with tuberculosis or any hogs with cholera from being brought into the state, requiring examinations to be made to prove that the live stock are free from these diseases. People suffering from tuberculosis and other infectious diseases, however, may come and go at will. Does this mean that North Carolina places a higher value on its live stock than upon its citizens?

The Bureau of Infant Hygiene sends out to all women who are interested literature regarding pregnancy, in the form of a set of nine letters, intended to encourage, instruct and advise mothers-to-be. Many physicians send in the names of patients for this literature.

North Carolina has adenoid clubs. The records of the Board of Health prove that there are not less than forty thousand children in the state between the ages of 6 and 12 who seriously need an operation for the removal of diseased tonsils and adenoids. Not more than 25 per cent of them are able to pay the fees charged by specialists. Fully 25 per cent are unable to pay anything at all. Thousands of them live from 50 to 200 miles from a good specialist. While all of the first-class specialists of the state willing are to help meet this condition, they cannot afford the sacrifice of time in operating on these children, one at a time at irregular periods.

To solve this problem, the Bureau of Medical Inspection of Schools of the State Board of Health has adopted the club plan of several children being operated on at the same time. The operations will generally be done at the county seat.

North Carolina has a goodly number of full-time county health officers. In some counties these officers are giving free "life extension" examinations. Persons with defects are referred to physicians for treatment. Persons of all ages are examined and numbers of cases of degeneration are detected and means taken to arrest the process. Other novelties in this enterprising state are "tonsil and adenoid clubs," in which children are operated upon in groups and dental offices are mounted on wheels for rural work.

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North Dakota.—The State Board has established a Bureau of Venereal Diseases and Dr. F. R. Smythe of Bismarck has been appointed chief.

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Ohio.—Through the coöperation of the Y. M. C. A. officials, a "keep fit" campaign is being conducted in Ohio high schools, illustrated lectures, exhibits, motion pictures and literature being used in this work. A woman lecturer is giving talks in schools and before organizations in the state. Rotary clubs are aiding in the campaign and have arranged for the showing of educational films in numerous cities.

A fight against trachoma is being waged in Portsmouth, Ohio, jointly by state and city officials. The campaign should be watched with interest by other Ohio River cities, in many of which trachoma is believed to be prevalent.

As a result of a survey which disclosed hundreds of trachoma cases among Portsmouth school children, a free clinic has been established. School children are being examined and all found with the disease are receiving treatment. It is estimated that there are not fewer than 1,000 trachoma cases in Portsmouth, and a similar situation is believed to exist in other sections which have received heavy immigration from the mountainous southern states where the disease has long been prevalent.

One and one-quarter millions of pamphlets, circulars and placards on venereal diseases and sex hygiene is the total output of the State Department of Health during the present fiscal year, ending July 1, in its campaign to educate Ohioans in regard to these subjects.

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Oklahoma.—The governor of Oklahoma has appointed other members to the Department of Public Health of the State, and the list now is: Dr. A. R. Lewis, commissioner; J. P. Folan, assistant health commissioner; Dr. J. C. Mahr, director of Bureau of Venereal Diseases, with W. A. Walker, chemist in charge, and C. B. Norris, bacteriologist in charge.

E. J. Webster, state registrar, has left the Department of Health and is now with the Corporation Commission.

Texas.—Dr. C. W. Goddard, president of the State Board of Health, has officially organized and installed three new bureaus of his department, Child Hygiene, Communicable Diseases and Public Health Education. Dr. Oscar Davis, assistant state health officer, has been appointed director of the bureau first named. The directors of the other two will be named later.

Texas has begun, through its State Board, an indexical health survey. This is under the direction of Dr. Douglas Largen of San Antonio and Dr. Howell of Brownwood. The work is to be begun at Wharton and later there will be similar centers established in the northern, eastern, central and western sections, so that the results may be representative of the whole state.

The following appointments have been made by the Texas Board: Dr. Oscar Davis, assistant state health officer; Dr. M. E. Parker, registrar of vital statistics; Mr. V. M. Ehlers, sanitary engineer; Dr. G. M. Graham, bacteriologist; Dr. H. C. Hall, director Bureau of Venereal Diseases; Miss Susie Barton, bookkeeper; Dr. C. W. Covington, director rural sanitation; Mr. George Loudermilk and Mr. Porter Loring, members State Embalming Board.

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Virginia.—The Bureau of Vital Statistics reports that, in 1915, 34,870 births were reported by physicians and 23,313 by midwives, while 843 certificates did not state who attended the mother. Despite the fact that three fifths of the births in Virginia are reported by physicians and that the physician is frequently called to a large number of difficult cases after the patients have been weakened by long and unwise waiting, the majority of the 333 deaths of mothers during confinement in 1915 occurred in the practice of midwives. Furthermore, because they know nothing of rendering timely aid when a minute's delay may mean the death of the child, midwives have about twice as many children born dead as have physicians. On the other hand many infants, whom the midwives would consider dead, are restored by the prompt use of artificial respiration and the like by the physician.

The warning of these statistics is plain: Every expectant mother should have the attention of a trained physician.

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Wisconsin.—*Racine Public Health Council.*—An account of the organization of a local health association in Racine, Wis., by H. L. Wilson, M. D., health officer of the city, is of interest, showing how easily such an organization may be effected in a live community. Dr. Wilson came upon the idea of a local public health society while attending the meeting of the American Public Health Association in Chicago. In the latter part of January twenty-five letters were sent to progressive, public-spirited men and women in Racine with reference to the new society. This was followed up by a personal call, and an early meeting was arranged for, and a committee appointed to draw up a constitution. Thinking that it was rather important to begin with a few enthusiastic members, Dr. Wilson did not try to get others until after the constitution had been adopted and, feeling it to be desirable to have small committees that will really work, none of them are larger than three members. The officers are prominent men and women of Racine; one is a union labor leader. About the middle of March the committees were appointed on housing, tuberculosis, child hygiene, industrial hygiene, medical and dental relief, recreation, hospitals, waste, and industrial safety.

The society has undertaken to interest the labor unions in the association, and they have become intensely interested. It is still too young to have achieved a great deal, but a start has been made. A prominent out-of-town speaker was engaged to speak for a whole week last month in the city. Dr. Wilson asserts his belief in the value of an organization of such kind in every city, which could do excellent work in connection with the local authorities and the American Public Health Association. He found it nowise difficult to organize the Racine Public Health Council, as the association is designated, in spite of the fact that the community has been until very recently very backward in its public health work. He looks upon the society as a permanent force towards the maintenance of a bigger and better public health department.

The Burlington, Wis., Public Health Association elected the following officers: President, Dr. W. E. White; vice-president, G. C. Rasch; secretary, Mrs. George Waller; treasurer, Mrs. Mary Newman.

Under the general charter recently adopted by the city of Sheboygan, Wis., the health board is abolished and its functions vested in a city health commissioner appointed by the mayor. Dr. J. E. Meany has been retained for the office.

Dr. G. W. Henika, Madison, deputy state health officer for the southern Wisconsin district, has been detailed by the State Board of Health to take charge of the establishment of clinics in Wisconsin cities in connection with the new bureau of venereal disease control.

Miss Mercy Rockwood of Oshkosh, a graduate of the course for public health instructors at Milwaukee, will join the staff of the bureau of venereal disease control in the State Board of Health for work in the social service division.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst, R. P. Albaugh and P. M. Holmes.

Women in Lead Industries.—Most of this bulletin is devoted to a description of lead industries and trade processes. The symptoms of lead poisoning are given, the question of individual susceptibility discussed, and a couple of pages are devoted to a summary of authoritative statements and statistics on lead poisoning in women. The lead compounds used and the mode of entrance into the human body are given. Under each industry the dangers of the prospective employment of women are emphasized. Occasionally an industry is already employing women in lead hazardous exposures.—Alice Hamilton, *U. S. Bureau of Labor Statistics, Bulletin No. 253*, February, 1919. (*E. R. H.*)

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Reconstruction of the Factory Medical Service.—The British Incorporated Association of Certifying Surgeons emphasizes the requirements of industrial hygiene including individual medical examination and practical knowledge of the conditions of employment. It believes that while a Ministry of Health should have certain powers of high control, the whole of the Factory Department should be transferred to the Ministry of Labour, since this ministry has the economic problems of labor under its care. There are twenty-nine recommendations, the most important, probably, being that outlining a practical method for coördinating the work of the certifying surgeon with that of the school medical officer and of colleagues in other districts. Other recommendations deal with the extension of national insurance to young persons; to the making of conditions respecting safety, care, and treatment; and to the method of payment for services and the inadequacy of present fees. Lastly, suggestions are made for increasing efficiency in the control of industrial diseases and poisonings. Copies of the report can be obtained upon application to Mr. E. A. Chambers, 16 John Dalton Street, Manchester.—*British Medical Journal*, Jan. 25, 1919, page 109.

(*E. R. H.*)

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Miners' Safety and Health Almanac for 1919.—While this circular is addressed to miners, it contains much of general interest to the average person in addition to the usual almanac features. Precautions against the common diseases, the commoner insects, mine hygiene and sanitation, including methods of making coal dust harmless, the disposal of human excreta in rural districts, and an excellent collection of "Safety Hints and Historical Events," one for every day in the year are included.—R. C. Williams, *U. S. Bureau of Mines, Circular 24*, 1918.

(*E. R. H.*)

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Training of Factory Health Officers.—The essentials of hygienic factory conditions and home conditions are stated. Safeguarding women employees through the woman supervisor is advocated. This woman should have a training in which the ideal course would be the first two years of the medical college—that part of the work that pertains to normal body functioning—supplemented by a course in labor problems and practical work in a factory. As we cannot wait for the graduates of such courses, the Women's Division of the Industrial Service Section of Ordnance has been planning an intensive course this summer (1918) at Mount Holyoke College. It is proposed to choose for training two groups of women: (1) Those who have already had successful experience as industrial supervisors or social workers, and supplement their practical experience by courses in physiology and hygiene; and (2) Graduates of physical education colleges whose training should be supplemented by a study of labor problems and practical work in factories. The health officer should have a factory uniform and be in good health herself. She should be fitted to advise employees, to organize gymnasium and drill classes if needed, to know housing opportunities, etc. The effort is to turn women from other vocations into industrial plants in order to increase woman power without injuring the woman, and so help in America's present crisis. (Several pages of discussion by employment managers follow.)—Dr. Kristine Mann, *Proceedings of the Employment Managers' Conference*, U. S. Bureau of Labor Statistics, Bulletin No. 247, January, 1919, pp. 11–18. (*E. R. H.*)

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Rest Periods for Industrial Workers.—The board sent out 388 schedules of inquiry on this subject and received 104 responses where rest periods had been tried, of which 15 had been discontinued. The conclusions are that rest periods have been found especially advantageous for workers on repetitive tasks demanding constant and close application; also they have proved valuable in heavy work and in work requiring constant standing or sitting. Rest periods eliminate time waste, improve disci-

pline, and cultivate regular habits. "While rest periods may be valuable supplementary means for the removal of fatigue, the fundamental means for its prevention are the provision of suitable working conditions such as proper lighting, heating, ventilation, installation of labor-saving devices and adaptation of the equipment to the worker." It is clearly indicated that for certain occupations a short recess in the work spell may be desirable from the standpoint of production. In other occupations, however, the nature of the work affords such opportunity for relaxation that regular rest periods are not required. The particular type and conditions of work are the determining factors.—*National Industrial Conference Board* (Boston), *Research Report No. 13*, January, 1919, 55 pp. *(E. R. H.)*

✱

Health Hazards of the Cloth Sponging Industry.—This bulletin deals with the unhealthful conditions surrounding workmen engaged in the process of sponging and steaming of cloth. Although this process is in use in every city and town of any size where cloth is made into garments, New York City has 65 such establishments which employ an average of 300 men,—no women being employed in any branch of this industry. The phases of the process are described. The cloth examiners inhale so-called "shod" or "fluff." They should wear a light mask. The sponger and his helper have hard labor in the carrying of rolls of cloth weighing up to 250 pounds, they work in a hot humid air, from which conditions they go to the cold of the street at quitting time. They are often immersed in steam. In but few instances does the wet bulb reading show less than 74° F., and in four shops it was 82° F. A large percentage of the men have worked in almost all the factories. There is a marked preponderance of the diseases of the respiratory tract, the most important of which is pulmonary tuberculosis. Correction consists in the removal of steam by hoods and ducts and the reduction of the unusual temperatures, as well as dressing rooms, drying quarters for clothing, and the installation of ventilating fans so that wet bulb temperatures do not exceed 75° F.—*New York State Dept. of Labor* (Albany), *Bulletin No. 89*, November 1918, 24 pp. *(E. R. H.)*

✱

Hours of Work Versus Output and Health.—The board made its study by schedules of inquiry in the silk manufacturing industry, replies being received from 71 establishments employing 30,095 workers. The information was supplemented by reports of field agents who visited a large number of mills so that in all, the findings are for 84 establishments. It was found that there were practically no records covering a sufficient period to permit of satisfactory study. While six establishments reported improvement, a large majority observed no noticeable change in health conditions when hours were shortened to 50, 52 or 54 hours per week from longer schedules. General factory conditions are reported upon as good to ideal although it is noted that the report of the U. S. Bureau of Labor Statistics, made some years ago, contained considerable criticism of improper ventilation. There is more likelihood of over-crowding in instances where small silk establishments conduct a few processes in rented space. The silk industry is characterized by a distinctly high death-rate from tuberculosis which is higher for female workers and is higher than the average rate for factory industries in general. While there is a strong presumption that conditions in the industry itself are partly responsible, these conditions have not been identified and it is certain that various collateral factors, such as nationality, personal habits, and living conditions have an important influence. Also, even in the United States, the proportion of young persons working in the silk industries is higher than in most factory industries, and higher than in the other textile industries. More information is wanted, especially the results of careful records of absenteeism, before it will be possible to present valid conclusions as to the effects of hours of work or any single factor on the health of workers.—*Natl. Ind. Conf. Board* (Boston), *Research Report No. 16*, March 1919, 54 pp. *(E. R. H.)*

✱

Industrial Lighting Codes.—Both the states of Wisconsin and Ohio, through their respective Industrial Commissions, have codified industrial lighting although that of Ohio is only a proposed code. That of Wisconsin was first issued in 1913 and the revised code, 1918. The Wisconsin one is exceptionally complete and instructive. It is well illustrated. Address, the respective *Industrial Commissions, Madison, Wisconsin* and *Columbus, Ohio.*

✱

Better Lighting Pays Big Dividends.—"An investigation of some 200 plants revealed the fact that efficient lighting increased the total output in such plants as steel mills 2 per cent, and in shoe factories and textile mills 10 per cent, while the total cost of furnishing a three-dollar-a-day workman with ample light for efficiency and safety is 1½ cents a day."—H. P. Heyne, *100% Efficiency Magazine*, April, 1919, page 106. *(E. R. H.)*

List of Labor Statistics.—A typewritten bulletin has been prepared showing the principal sources of statistics on labor which have been compiled by Federal and state agencies. These sources have been grouped under 18 headings, beginning with "Accident Compensation" and ending with "Welfare Work." The index comprises some 25 pages in which are listed principally industries, trades, and workers. A handy scheme of codifying enables one to locate quickly the source of the information desired, as well as a very brief abstract of the same, continued in the remaining 50 odd pages. (Two headings under which the abstractor looked, viz., "Occupational Diseases" and "Welfare Work," show the list not to be complete. It is evidently the idea to extend the list.)—*Central Bureau of Planning and Statistics*, Washington, D. C. (*E. R. H.*)

✦

Cost of Health Supervision in Industry.—A summary of the experience of 99 industrial concerns employing half a million people in 15 states is given. The average number of employees per plant was 5,005, the maximum 37,107, and the minimum 141. The distribution through various industries is representative. A summarizing table shows that the average cost per person per year is $2.50 and, if 4 plants are omitted which rendered unusual service such as giving both medical and surgical attention to their employees at the plant and in their homes, besides assuming the medical care of employees' families, the average cost for the 479,634 employees in the other 95 plants was $2.21. "The significance of these data, from a general viewpoint, is that such a large amount of medical and surgical service is possible at an average of only $2.21 per employee per year."—Magnus W. Alexander, Managing Director, Natl. Ind. Conf. Board. *Modern Hospital*, May, 1919, page 376–7. (*E. R. H.*)

✦

Treatment of Industrial Problems by Constructive Methods.—This bulletin outlines the purposes of the Working Conditions Service of the U. S. Department of Labor, the personnel of which is provided by the U. S. Public Health Service. Its functions are "to supply industries with this fundamental information and with a consulting service free from bias and partisan propaganda." There should be two beneficial results—increased production, and conservation of the lives and health of industrial workers. The service is in the relation to employers and employees of consulting expert and not that of arbiter or referee. The service has three divisions: Industrial Hygiene and Medicine, Safety Engineering, and Labor Administration. The personnel of the first division is composed of industrial physicians, hygienists, sanitarians, and specialty engineers. It offers its information and supplies its personnel upon application from employers or workmen's organizations. Its early objects are to standardize hygiene and systems of medical and surgical service for industries. An appeal is made to colleges, universities, and technical schools to provide instruction in industrial hygiene and medicine. A large enclosed folder shows the organization of the Working Conditions Service.—*U. S. Dept. of Labor*, Special Bulletin, 1919, 15 pp. (*E. R. H.*)

✦

Humanizing Industry.—The war revealed great industrial discontent in our country. The fault of the I. W. W. is not primarily with its members, but with our existing social and industrial system. Organized labor has the right to say here, as it is already saying in England, "We have done our bit and served our country. What is our country going to do for us?" The German government did everything for the working man before the war. Therefore, he was willing to make sacrifices for his country. A subconscious sense of gratitude underlay his patriotism and morale. Some people say if the working man's wages were raised, his health would be improved. It is still truer that if his health were improved, his wages would be increased. While this may not be seen in the case of the individual, yet if we increase even slightly the health and thereby the working power of the nation as a whole, the general work level will rise. Great returns are to be had in investments by employers in factory sanitation; by the working man in better food, housing, amusements, and books on health; and by the state in dispensaries, health departments, health insurance, etc. The working man also needs mental health. This depends on the satisfying of certain fundamental instincts. A human being whose instincts are balked becomes an enemy of society. This is the real reason for the I. W. W. He is the naughty boy of industry. We have not given him the outlet which he must have. The major instincts in the workman's life are self preservation, self expression or workmanship, self respect, loyalty upon which depends team spirit and pride, the instinct of home making (note the homeless migratory I. W. W.), the instinct of worship in which his daily work should appeal to his idealism and, finally, the play impulse. Of the seven instincts mentioned, only the instinct of self preservation, in which there is a securing of a living wage, is fairly well satisfied at present. We must have the rest of the septet. The employer must see in the workman his brother-man, with the same soul-hunger, needing the same soul-food.—Irving Fisher, *Annals Amer. Acad. Pol. and Soc. Science*, March, 1919, Vol. lxxxii, No. 171, pp. 83–90. (*E. R. H.*)

Health of Coal Miners.—In a letter to the (*London*) *Times*, Professor J. S. Haldane corrects the widespread mistake as to the alleged dangers to life and health in coal mining as compared with other occupations in Great Britain. An accompanying table shows the death-rates by age groups and compares coal miners with other occupations from which a not excessive death-rate is noted in each age period. However, the death-rate from accident is about double that in average occupations. Coal mining is now one of the most healthful occupations, although it could be made still more healthful.—London Letter, *Jour. A. M. A.*, April 26, 1919, page 1240. (*E. R. H.*)

✱

Teaching Laundry Work.—The Cincinnati General Hospital has a system of laundrying that prevents congestion, safeguards health and comfort of its employees, uses male and female workhouse inmates to fill out when other employees are not obtainable (these employees are really grateful for opportunities for decent work and contact with decent people and have never given any trouble), and finally gives instruction in laundry management to students of the University of Cincinnati who are interested in household economics. Many students have spent weeks in the summer vacation for this experience.—*Hospital Management*, April, 1919, Vol. VII., No. 3, page 28. (*E. R. H.*)

✱

Tuberculosis in an Industrial Community.—In this summary of the Framingham demonstration it is pointed out that this is a typical industrial American community, having rather favorable mortality and morbidity records when tuberculosis is compared to the registration area as a whole. On the other hand, the disease exists to a much greater degree than has hitherto been supposed. The application of the Framingham findings to the United States as a whole would indicate that there are about one million active cases in the country, and something over two million active and arrested cases. These figures are declared minimum estimates.—*Framingham (Mass.) Monograph No. 5*, March, 1919. (*E. R. H.*)

✱

Shipyard Occupations.—This special bulletin has been prepared to aid employment managers and interviewers in selecting workers and adjusting them to their jobs. It is also for the use of foremen. All the fundamental trades and occupations are listed, with the most commonly accepted names used as a standard. The handbook is especially designed for shipyards. There are approximately 180 standard shipyard occupations. An extended index to allied occupations enables the interviewer desiring to hire "Anglesmiths," for example, to see at a glance that he may consider "Architectural Iron Workers," "Blacksmiths," etc. In the body of the book a page is devoted to each occupation with a paragraph of description under each of eight regularly used headings. A supplement is to be issued covering shipyard occupations in which handicapped persons can be employed. "It is more economical and more expedient to spend five or even ten minutes in properly placing the new worker than it is to spend two hours or sometimes two days in trying to replace him."—*U. S. Shipping Board Emergency Fleet Corporation*, Philadelphia, Special Bulletin, 1918, 147 pp. (*E. R. H.*)

✱

Shop Lighting.—A pamphlet has been issued by the National Safety Council, describing the features to be aimed at in a lighting system, as well as the equipment used. Detailed designs for certain typical conditions are given, showing how the general principles are applied in actual practice. Natural lighting is considered. The pamphlet is replete with illustrations and diagrams.—*Safe Products No. 22*, National Safety Council. (*R. P. A.*)

✱

Decrease of Occupational Diseases in Great Britain.—During the eleven months ended November, 1918, the total number of cases of poisoning and of anthrax reported under the Factory and Workshop Act was 243, compared with 623 in the corresponding period of 1917. The number of deaths in 1918 was 25, compared with 79 in 1917. In addition, 35 cases of lead poisoning (including 20 deaths) among house painters and plumbers came to the knowledge of the Home Office during the eleven months ended November, 1918, compared with 53 cases (including 17 deaths) during the corresponding period of 1917.—*Labor Gazette*, London, December, 1918. (*R. P. A.*)

✱

Dust and Fume Control.—The electrostatic method of dust precipitation has proved highly successful, especially for the suppression of fine dust, which formerly was very difficult to control. The installation and operating costs are rather high, but all plants show a good saving even in such low value material as cement dust. A cement plant installing this equipment at a cost of $180,000 with operating expenses of $10,395 saved cement dust to the value of $25,000 and potash worth $50,000 in one year. The apparatus has also been successfully used to remove fine drops of liquid carried in gases such as the removal of acid fumes from the emissions of chemical plants.—U. S. Bureau of Labor Statistics, *Monthly Labor Review*, February, 1919. (*R. P. A.*)

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Complement Fixation Test in Tuberculosis.—The practical utility of the complement fixation test in the diagnosis of tuberculosis is limited by the fact that the highest percentage of results obtains in the obvious cases with tubercle bacilli in the sputum. With suspicious symptoms and signs a persistently positive reaction probably signifies an active tuberculosis. A positive reaction occurring with neither symptoms nor signs does not justify a diagnosis of active tuberculosis, though it is quite probable that there has been an active process recently. With frank signs and symptoms, yet with no tubercle bacilli in the sputum, a negative test cannot outweigh the clinical evidence, though in all such cases a Wassermann test should be made.—H. F. Stoll and L. Neuman, *Jour. A. M. A.*, 72, 1043 (1919).

✽

Colorimetric Standardization of the Cell Suspension in the Wassermann Reaction.—The cell suspension is usually estimated from the quantity of sediment in the centrifuge tube after the last washing. This procedure is not the best, for various reasons. In the Sahli hemoglobinometer is furnished a method for obtaining a cell suspension everywhere of the same strength. The complement will be found to titrate more evenly.—R. J. Pickard, *Jour. A. M. A.*, 72, 1074 (1919).

✽

Simple Method for the Defibrination of Blood.—The apparatus consists of an ordinary Erlenmeyer flask with a cork to fit, and a piece of looped wire, preferably copper, since copper will not rust and is readily cleaned. After sufficient shaking, the wire is removed by withdrawing the stopper, and the fibrin will be found closely adhered to the mesh, leaving the defibrinated blood within the flask. An illustration of the simple apparatus is given.—F. H. Reynolds, *Jour. A. M. A.*, 72, 1075 (1919).

✽

Medium for Prolonging the Viability of the Meningococcus.—The author describes a yeast medium simple to prepare and which prolongs the viability of the meningococcus for at least a month.

Ten gm. of bakers' or brewers' yeast are macerated in 100 cc. of water for twenty minutes, and the suspension is steamed for two hours, the temperature not exceeding 100° C. It is then clarified by adding Merck's dialyzed iron (5 per cent ferric oxid) and filtering through glass wool. The first step in this clarification is not necessary unless a specially transparent medium is desired. To 1 per cent agar containing 2 per cent peptone and 0.4 per cent potassium phosphate is added an equal amount of the prepared yeast. The reaction is adjusted to $P_H = 7.6$, which, after heating, is reduced to 7.4. The medium is distributed, 10 cc. in each tube, and is autoclaved for one-half hour at fifteen pounds. The result is a semisolid medium which is seeded by making stabs into it with a considerable amount of the inoculum. The tubes are sealed with paraffin or sealing wax and are kept at 37° C. until required.—Eberson, F., *Jour. A. M. A.*, 72, 852 (1919). (*D. G.*)

✽

New Type of Paratyphoid.—A new type of paratyphoid bacillus has been isolated from nineteen cases among Serbians, Greeks and Bulgarians. The organism behaves in cultures exactly as do the common paratyphoid bacilli and has a similar morphology, but it is differentiated by entirely failing to be agglutinated by antiparatyphoid A or B serums, while it is readily agglutinated by its own antiserum even in high dilution. The cases from which it has been isolated have differed clinically in no way from typical cases of paratyphoid B infection.—L. Hirschfeld, *Lancet* (*Engl.*) Feb. 22, 1919; *N. Y. Med. Jour.*, April 12, 1919.

✽

Etiological Agent of Influenza.—The authors describe with abundant detail groups of granulations which they were able to stain in histologic sections from subjects dying from influenza. Each granule measured from 0.3 to 0.6 microns in diameter. These granular bodies are offered as the etiological agent of influenza, although the statements are not backed up by culture or inoculation experiments. The problematical organism is called *Ænigmoplasma influenzæ* Prell.—A. Binder and H. Prell, *Muenchen. med. Wochschr.*, Dec. 10, 1918; *Med. Rec.*, 95, 618 (1919).

✽

Effect of Certain Magnesium Salts on Pyogenic and Other Bacteria.—Occasionally cosmetics for the removal of pimples from the face contain a concentrated solution of magnesium sulfate. The beneficial effect of this solution is shown not to be due to any bactericidal action on *Staphylococcus aureus*. Streptococcus skin infections, however, may be inhibited if any concentration of magnesium sulfate

be used externally. Magnesium chloride had a very marked inhibitory effect on the growth of *S. aureus*, *B. coli*, *B. typhosus* and *P. pyocyaneus* which suggests that it may be substituted for magnesium sulfate under certain conditions.—Zae Northrup, *Jour. Inf. Dis.*, 24, 170 (1919).

✱

Etiology of Influenza.—The number of experiments carried out by the authors, according to their own statement, is too small to justify the drawing of final conclusions. However, the number of positive results obtained would seem to be significant. The pathological lesions in what may be called experimental influenza in animals closely resemble those seen in the lungs of men. There is some evidence in favor of the view that the passage of the virus from one animal to another may raise its virulence. Inoculation of the filtered and unfiltered sputum taken from cases of influenza, especially at an early stage of the disease, has been found to produce lesions in the lungs in a high proportion of inoculated animals. The inoculation of blood may not always produce such striking results. A minute micro-örganism of coccoid shape may be grown by Noguchi's cultural method from the kidney of iafected animals, the filtrates of lung tissue, and the filtered sputum from cases of influenza. The cultures, when inoculated into animals, produce typical "experimental influenza" lesions. There are very strong grounds for considering that the organism isolated is capable of passing through a filter, and that it is in all probability the cause of influenza as seen today. —H. Graeme Gibson and J. I. Connor, *Brit. Med. Jour.* No. 3038, March 22, 1919.

✱

Rocky Mountain Spotted Fever in the Domestic Rabbit.—The domestic rabbit is susceptible to infection with Rocky Mountain spotted fever (a) by the bite of infected ticks; (b) by intraperitoneal injection of infectious blood from guinea-pigs or other rabbits. The susceptibility is less marked and more variable than in the case of the guinea-pig. The lesions produced are essentially the same as those found in the case of the guinea-pig, monkey or man. The presence of the small diplococcoid organism described by Wolbach, in connection with this disease, can be demonstrated in infected rabbits. Immunity is not transmitted from parents to offspring in this species.—N. C. Foot, *Jour. Med. Res.*, 39, 495 (1919).

✱

Picramic Acid for Permanent Color Standards in Nesslerization.—There are various serious objections to the use of ammonium salts and Nessler's reagent for colorimetric determination of nitrogen. Accordingly the authors suggest the use of picramic acid: 0.1 gm. of picramic acid and 0.2 gm. of anhydrous sodium carbonate are dissolved in 30 cc. of warm distilled water and made up to 1 liter. The color is practically permanent. All color comparisons in which Nessler's test can be used can just as readily be made by picramic acid. The chemical is easily prepared from picric acid by a modified method given in the *Jour. Biol. Chem.*, 35, 565 (1918).—G. Egerer and F. Ford, *Jour. Lab. Clin. Med.*, 4, 439 (1919).

✱

Lead Peroxide Reaction with Spinal Fluid.—A suspension of lead peroxide is not affected by normal spinal fluids. Varying amounts of precipitation and agglutination occur regularly with abnormal fluids. Early and complete precipitation is observed in the acute types of meningitis.—E. Steinfield, *Jour. Lab. Clin. Med.*, 4, 445 (1919).

✱

Action of Bile on Dysentery Bacilli.—Disappearance of dysentery bacilli from the stools of patients was observed to coincide with the flow of bile to the intestinal canal. Experiments were made in vitro to determine whether bile exerts an injurious effect on dysentery bacilli. Ox bile heated at 120° C. was inoculated with a number of strains of Shiga, Hiss and Flexner bacilli; after a certain period at 37° C. approximately 1 cc. of the bile was used to inoculate bouillon and gelose. Even forty-eight hours' contact with the bile failed to prevent growth of the Hiss and Flexner bacilli. Seven out of the fourteen strains of Shiga bacilli failed to yield a culture after contact with bile.—S. Marbais, *Compt. Rend. Soc. Biol.*, 81, 1136 (1918); *Chem. Abstr.*, 13, 854 (1919).

✱

Attenuation of Tubercle Bacilli.—The author records the results of consecutive cultivation of single strains of tubercle bacilli of human, bovine and avian types on artificial media for twelve years. All three strains were highly virulent when isolated, but during the years of their artificial cultivation each has progressively lost in virulence so as now to be almost wholly avirulent, though each has preserved its other characteristics unaltered. It is the author's intention to experiment with these avirulent organisms in the treatment of human tuberculosis.—Nathan Raw, *Lancet (Engl.)*, March 8, 1919; *N. Y. Med. Jour.*, April 26, 1919.

✱

Bacillus of Spanish Influenza.—The organism has a powerful elective affinity for the respiratory tract of the laboratory animals, and the lesions are the same as those found in cases of influenza in man. The organism may be recovered again from the lesion of dead animals. The organism, though of

the morphology of Pfeiffer's bacillus, is not the same. The action of the organism is strictly specific and does not depend upon secondary invaders. The disease of the recent epidemic is not influenza of the form well known and of past epidemics.—A. J. Hinkelmann and C. P Hinkelmann, *N. Y. Med. Jour.*, 49, 712 (1919).

✱

On the Nutrition of the Tubercle Bacillus.—Experiments were undertaken to clear up some of the fundamentals of the tubercle bacillus' general metabolism. The growth of the organism was studied on simple media of definite chemical composition. The results of the experiments indicate that the tubercle bacillus hydrolyzes proteoses and peptones with the formation of amino acids, and deaminizes the latter. The course of deaminization is obscure, but the failure of utilization, in the presence of glycerol, of the ammonium salts of the fatty, ketone, and hydroxy acids which might result, suggests that none of these is the normal product of the process. On the other hand the ready utilization of amines, alcohols, and of ammonium salts of dibasic acids, suggests a more likely route, in which the monobasic acids, which in some way seem inhibitory, are not formed. The theory is advanced that the amino acids (that is, those studied—glycocoll and alanine) break up into ammonia and alcohols, perhaps with amines as intermediate stages, that hydrax malonic acid (tartronic acid) is formed in the medium through the oxidation of glycerol, and that ammonium malonate and malonic ester or closely allied compounds are of great importance in the synthesis of the bacillus' organic substance.—Long, E. R., *Amer. Rev. of Tub.*, April, 1919, 86. *(D. G.)*

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Results of Prophylactic Vaccination against Pneumonia at Camp Wheeler.—Thirteen thousand, four hundred and sixty men, or about 80 per cent of the entire camp strength, were vaccinated against pneumonia with pneumococcus lipovaccine. Both the local and general reactions produced by the vaccine were usually mild. Most of the troops inoculated were under observation for two or three months after vaccination. If all cases of pneumonia that developed within one week after vaccination are excluded from the vaccinated group, there remain only eight cases of pneumonia produced by fixed types, and these were all secondary to severe attacks of influenza. The weekly incidence rate for pneumonia (all types) among the vaccinated troops was conspicuously lower than that for the unvaccinated troops. The pneumonia incidence rate per 1,000 men during the period of the experiment was twice as high for unvaccinated recruits as for vaccinated recruits, and nearly seven times as high for unvaccinated seasoned men as for vaccinated seasoned men. The results of pneumococcus vaccination at Camp Wheeler have not been so striking as those obtained at Camp Upton in 1918, largely on account of the influenza epidemic. The results are encouraging nevertheless.—R. L. Cecil and H. F. Vaughan, *Jour. Exp. Med.*, 29, 457 (1919).

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Globulin Test in Spinal Fluid for Use at the Bedside.—A suitable reagent for the globulin test in spinal fluid may be prepared by dissolving 3 gm. of anhydrous potassium dihydrogen phosphate in 100 cc. of distilled water and adding 0.05 cc. of glacial acetic acid. In making the test, 0.2 cc. of the spinal fluid plus 0.6 cc. of the reagent are mixed in a small agglutination tube and placed in boiling water for six minutes. This test is slightly less delicate than the Noguchi test, but offers some advantages over the latter for field work.—H. L. Amoss, *A. M. A.*, 72, 1289 (1919).

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Method of Fumigation with Bleach-Formalin.—The use of bleaching powder and formalin in fumigating rooms has been proposed by the author. By the aid of a new and convenient apparatus, this new method has been compared quantitatively with the permanganate-formalin and with the dichromate-formalin methods. The comparison leads to the conclusion that by using 620 gm. bleaching powder and 800 cc. formalin for each 1,000 cu. ft. to be fumigated, as much formaldehyde gas will be thrown off into the room as by the use of 250 gm. permanganate and 500 cc. formalin, and at only one-sixth the cost. The bleach-formalin method is said to be only one-third as costly as the dichromate-formalin method. It has been shown that the printed objections to the bleach-formalin method are without foundation in fact and are contradicted both by experiment and in practice.—Horn, D. W., *Jour. Ind. and Eng. Chem.*, Feb., 1919, 126. *(D. G.)*

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A Physiological Explanation of Agglutination.—Why do bacteria, emulsioned in physiological salt solution or in any other indifferent liquid, remain for a long time in the state of suspension? According to Mansfield, this is because they are provided with a "colloid protector." The specific serum, which agglutinates these bacteria, by breaking up this state of suspension, effects this by reason of a fermentative action which decomposes this colloid protector. This is the dominant idea of the author. The author begins by showing a large analogy between the mode of action of the agglutinins and that of the ferments. He cites in particular (a) their ability to act in very small amounts upon large quantities of substance; (b) the non-destructibility

of the ferments and their possible recuperation after they have been absorbed; (c) their optimum action at 30–50° C.; (d) the necessity for the presence of salts; and (e) the impossibility of obtaining the ferments in the pure state, etc., all characters common to agglutinins and to ferments in general. The hypothesis evolved by Mansfield concerning the fermentative nature of the agglutinins is not, therefore, in opposition to known facts.

With respect to direct evidence in favor of the fermentative character of the agglutinins, the author has furnished this through his studies, on the one hand, upon the relations between the concentration of the agglutinins and the rapidity of the reaction, and on the other hand, upon the rapidity of the agglutination reaction at different temperatures. He found confirmation of his hypothesis also in the procedure of Pregl, which permits the demonstration in the agglutinating serum, with the aid of the refractometer, of the presence of an active ferment towards the colloid protector in question, and which plays the agglutinogenic rôle with respect to the agglutinating ferment. When a bacterial emulsion is filtered through a bougie and a rabbit is injected with the filtrate, it will be constantly observed after some time, that its serum contains a ferment which is active towards the colloid protector. In substance, when a bacterial emulsion is agglutinated with its specific serum, that is to say, when it has been submitted to the fermentative action of the agglutinin, and is then filtered through a bougie, it will be found that the colloid protector is no longer present; the filtrate injected into the rabbit is no longer capable of causing the formation of agglutinin.

Such are the arguments which Mansfield considers to be sufficiently sound to sustain the belief in the fermentative nature of the agglutinins. G. Mansfield, *Ztschr. f. Immunitätsforsch.*, 27, 197–212 (1918).

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New Improvement of the Wassermann Reaction.—One of the disadvantages of the sero-reaction of syphilis lies in the restraining action peculiar to the serum itself (anticomplementary). Very recently Mandelbaum claimed to have found the means of avoiding this difficulty, simply by inactivating the serum to be examined by heating it at 56° for thirty minutes, after having diluted it with physiological salt solution (0.5 cc. of serum + 2 cc. of saline). By subjecting a series of human restraining serums to examination with the ordinary reaction and with the reaction as modified by Mandelbaum, Hatziwassilin found that in certain cases the heating of the previously diluted serum was useful; unfortunately, however, there are serums the anticomplementary action of which is not at all influenced by the technic of Mandelbaum.—Hatziwassilin, *München. med. Wchnschr.*, 65, 798 (1918).

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Experience with Protective Inoculation against Typhus Exanthematicus.—The causal agent of typhus being unknown, vaccinations have been carried out with the virulent blood of patients; this blood was defibrinated and heated at 60° C. for thirty minutes. The doses of the vaccine injected at three sittings were 2 cc. on the first day, 2 cc. on the fourth day and 4 cc. on the seventh day. In order to prevent contamination, the authors added 0.2 per cent of formalin before heating the blood. In three series of guinea-pigs, the vaccine in question was injected intraperitoneally, under conditions analogous to those practiced upon man, 0.5 cc. on the first day, 0.5 cc. on the fourth day and 1 cc. on the seventh day. Then at the expiration of variable intervals, ten, twenty-one and twenty-nine days, they were inoculated, along with controls, with 3 cc. of virulent human blood. It was shown from these experiments that when the inoculation was made ten days after the last vaccinating injection the animals showed an elevation of temperature indicating that the immunity was not very substantial. The results of the vaccinations were much better when the interval between the last vaccinating injection and the inoculation of the virus was twenty-one days, and still better, twenty-nine days. The authors add, however, that these experiments should not be regarded as decisive, since the number of guinea-pigs used for these experiments was not sufficiently large.

Six hundred and fifty persons were vaccinated by means of the formalined and heated blood; none showed the Weil-Felix reaction; the examination of the blood was made ten and fourteen days after the last injection of the vaccine. Of these 650 vaccinated persons, 21 contracted typhus; 6 contracted the disease within fourteen days following the vaccinations, thus during the incubation of typhus, which is from twelve to twenty days; 4 had only received two vaccinating injections, instead of three. In addition to these 10 cases, which can be rigidly excluded, there were 11 persons who contracted the disease, notwithstanding they were vaccinated under favorable conditions. The authors recognize that the immunity conferred by the vaccine is not absolutely certain. They have the impression that the vaccine exerts a favorable influence upon morbidity and mortality, but are of the opinion that its employment should not lessen the employment of usual measures, particularly delousing and lice eradication measures.—Mollers and Wolff, *Deutsche med. Wchnschr.*, 44, 676 (1918).